STUDY OF CUTANEOUS MANIFESTATIONS IN CHILDREN PRESENTING TO PAEDIATRIC EMERGENCY DEPARTMENT

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE RULES AND REGULATIONS FOR THE M.D. BRANCH XX (DERMATOLOGY, VENEREOLOGY AND LEPROSY) EXAMINATION OF THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY TO BE HELD IN APRIL, 2017

CERTIFICATE

This is to certify that the dissertation entitled "Study of cutaneous manifestations in children presenting to paediatric emergency department" is the bonafide original work of Dr. Parthiban.U

This study was undertaken at the Christian Medical College and Hospital, Vellore from August 2015 to July 2016, under my direct guidance and supervision, in partial fulfilment of the requirement for the award of the MD degree in Dermatology, Venereology and Leprosy of the Tamil Nadu Dr. M.G.R. Medical University.

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DECLARATION

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DECLARATION

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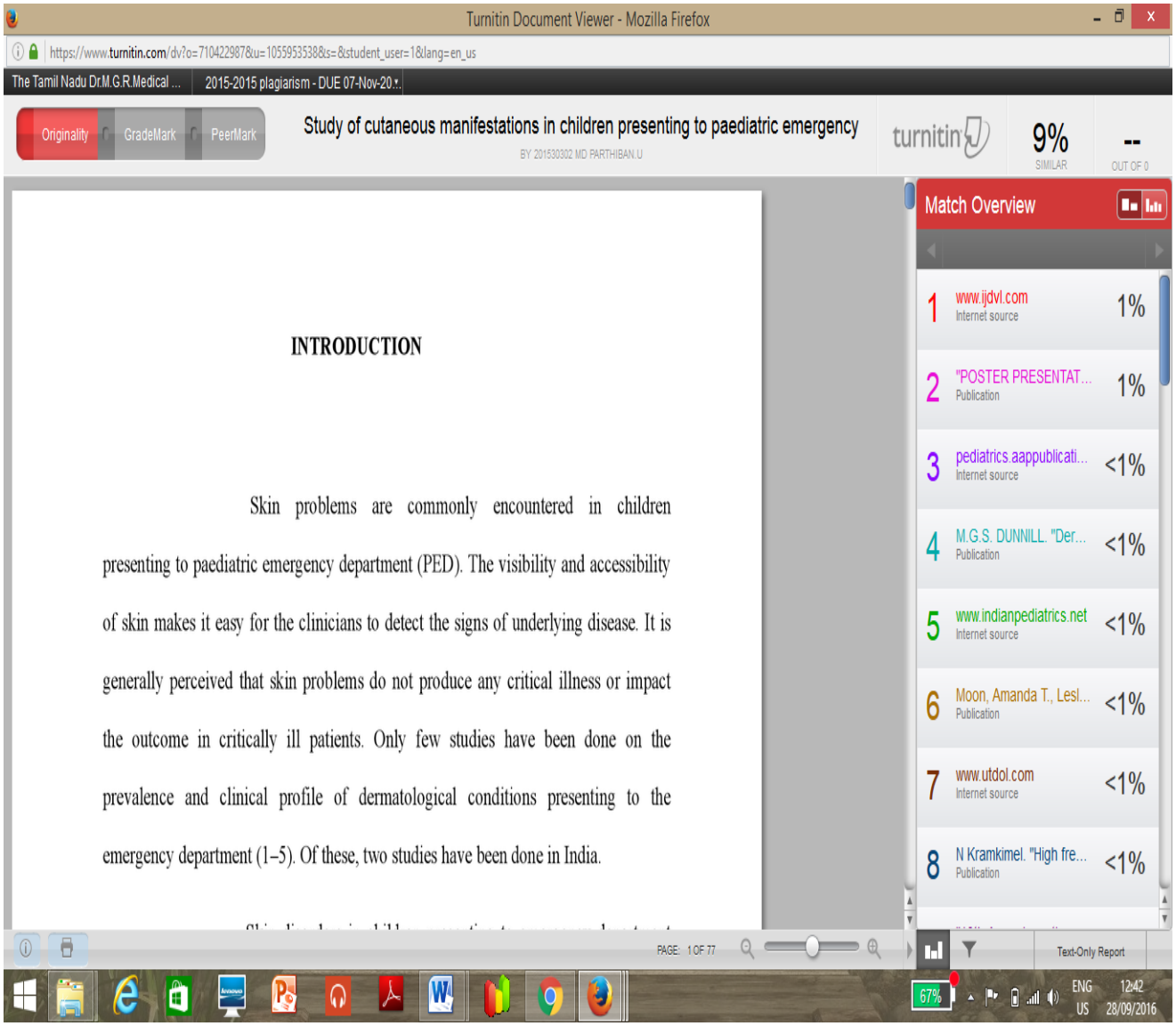
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INTRODUCTION
Skin problems are commonly encountered in children presenting to paediatric emergency department (PED). The visibility and accessibility of skin makes it easy for the clinicians to detect the signs of underlying disease. It is generally perceived that skin problems do not produce any critical illness or impact the outcome in critically ill patients. Only few studies have been done on the prevalence and clinical profile of dermatological conditions presenting to the emergency department (1–5). Of these, two studies have been done in India.
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ABBREVIATIONS

PED	-	Paediatric emergency department
TEN	-	Toxic epidermal necrolysis
HSV	-	Herpes simplex virus
PCR	-	Polymerase chain reaction
SJS	-	Stevens Johnson syndrome
BSA	-	Body surface area
EM	-	Erythema multiforme
DRESS	-	Drug reaction with eosinophilia and systemic symptoms
HLA	-	Human leucocyte antigen
ESR	-	Erythrocyte sedimentation rate
AGEP	-	Acute generalized exanthematous pustulosis
SSSS	-	Staphylococcal scalded skin syndrome
HFMD	-	Hand foot mouth disease
HSP	-	Henoch Schonlein purpura
ANA	-	Anti nuclear antibodies
KD	-	Kawasaki's disease
IVIG	-	Intravenous immunoglobulin G
EULAR	-	European League Against Rheumatism
SLE	-	Systemic lupus erythematosus
SIRS	-	Systemic inflammatory response syndrome

WBC	-	White blood cell
CRP	-	C reactive protein
LFT	-	Liver function tests
HIV	-	Human immunodeficiency virus
MRSA	-	Methicillin resistant staphylococcus aureus
SLICC	-	Systemic Lupus International Collaborating Clinics

CONTENTS

INTRODUCTION

Skin problems are commonly encountered in children presenting to paediatric emergency department (PED). The visibility and accessibility of skin makes it easy for the clinicians to detect the signs of underlying disease. It is generally perceived that skin problems do not produce any critical illness or impact the outcome in critically ill patients. Only few studies have been done on the prevalence and clinical profile of dermatological conditions presenting to the emergency department (1–5). Of these, two studies have been done in India.

Skin disorders in children presenting to emergency department can be classified into three broad categories(6). The first is patients with primary skin conditions presenting to emergency department. The second would include patients with systemic diseases associated with skin manifestations. The third group would be patients who develop skin manifestations as a complication of treatment for other systemic conditions. Although most of them are not true emergencies, some are severe and life threatening requiring appropriate diagnosis and management (2).

Most studies have shown cutaneous infections as the most common reason for patients presenting to paediatric emergency department(1,2). There is, however, limited information on the outcome of patients attending PED with skin related ailments and requiring hospitalization. We undertook this study in our hospital to describe the prevalence and spectrum of skin manifestations in children who presented to the paediatric emergency department. We also monitored the clinical

outcome of children who required admission in terms of outcome which included either resolution of clinical symptoms or mortality.

Aims and objectives

Primary aim:

To study the clinical profile of skin manifestations in children < 16 years presenting to the paediatric emergency department over a period of 1year.

Secondary aim:

To assess the impact of skin lesions on clinical outcome in hospitalized patients.

REVIEW OF LITERATURE

Introduction:

Skin problems are commonly encountered in children but have not received much attention in paediatric emergency department. This is probably because dermatology is considered to be primarily an outpatient speciality. Further it is generally perceived that skin problems do not produce any critical illness or impact the course or outcome in critically ill patients. Some of the diseases including bullous impetigo, varicella, urticaria are acute and can be severe but are not usually potentially life-threatening but diseases such as angioedema, erythroderma, staphylococcal scaled skin syndrome and toxic epidermal necrolysis (TEN) can be life threatening and require appropriate diagnosis and management (2).

A disagreement in the diagnosis of skin conditions of about 18–66% is reported between dermatologists and paediatricians for the skin diseases in children presenting to emergency department thus indicating the role of dermatologists and training of paediatricians working in the emergency department (1). Also a recent study showed that health outcomes and patient care in children who presented with a diagnosis of atopic dermatitis and eczema to the emergency department were better after establishment of a paediatric emergency dermatological service (1). Most of the studies that have evaluated the spectrum of skin diseases in children presenting to emergency department and its impact on clinical outcomes are retrospective.

In one of the earliest publications on this topic in 1991, the authors Krauss et al, retrospectively reviewed the medical documents over 4 one-week periods (January, April, July, and October) in a PED of a tertiary care centre in Boston. They described the patients by their age, diagnosis, chief complaints, and seasonal variation (7). Of 3784 patients who visited the PED, 50% were children less than 3 years and 12% were adolescents. The most common problems were secondary to trauma and infection. The authors recommend expanded skills in managing infections for non-paediatric residents working in the emergency department (7).

In a subsequent prospective study from Virginia by Shivaram et al, that spanned 6 weeks which included 1381 patients who visited PED, a total of 554 (40%) had a skin complaint of which 431 (31%) had primary skin complaints, in 35 (3%) it was secondary and in another 88 (6%) visits it was found incidentally only after clinical examination(8). In this study, cutaneous injury was the most common diagnosis. There were also many other cutaneous conditions documented, including contact dermatitis and infections (8).

Another prospective study from France done in 2004, which showed not only the frequency of skin diseases seen in a PED but also, evaluated the benefits of a dermatologist's advice in diagnosis. This study was done over a 5 month and included 395 children. Skin disorders contributed to 4% of the total visits out of which 6 conditions contributed up to 57 % of cases- herpetic gingivostomatitis, urticaria, viral exanthem, atopic dermatitis, diaper dermatitis and varicella. The diagnosis and treatment were modified by a dermatologist in up to 42% and 30% of cases respectively (9).

Kramkimel et al, in 2010 conducted a retrospective study on patients presenting to PED of a university hospital in Europe over a 1 year period. A total of 20652 children's medical documents were reviewed of which 1897 children presented with 169 different diagnoses. The majority were infectious, seen in 46.5%, (14.4% bacterial and 27.6%viral), followed by inflammatory diseases in 26.2%, (Henoch Schonlein purpura-2.1%, atopic dermatitis-3.5%, urticaria and angioedema-15.9%), drug reactions (1.2%), transient diseases of new born (3.7%), burns (6.4%), insect bites (7.8%),and non-specific conditions(9.2%). 155(8.2%) children required hospitalization (2).

In 2013 a prospective study by Landolt et al, done in a tertiary centre in Switzerland, of the 9041 children who visited emergency department, 1572 (17.4%) had skin problems of which 853 (54.3%) had a primary skin problem. A total of 81(5.2%) patients with skin conditions required admission. Allergic and inflammatory disorders contributed the majority (42.9%) in this study followed by infections (31.8%), trauma (11.9%) and congenital disorders (2.3%) (1).

The most recent study published in 2016 on children with age ranging from 3 days to 18 years included 347 children with skin manifestations. The most common diagnosis noted were infections and inflammatory disorders (10).

Table 1: Comparative data of world literature

Author	Year of study	Country	Total number of patients in the study	Total number of patients with skin lesions	Most common disease
Shivaram et al	1993	United States	1381	554	Trauma
Auvin et al	2004	France	Not available	395	Infections
Kramkinel et al	2010	France	20652	1897	Infections
Landolt et al	2013	Switzerland	9041	1572	Inflammatory disorders
Moon et al	2016	United States	Not available	347	Infections

There are only very few studies from India which have evaluated the spectrum of skin lesions seen in paediatric emergency department. In a study done by Sarkar et al, over a period of 1 year in New Delhi, paediatric dermatological emergency referrals were evaluated in 103 patients. The spectrum of paediatric dermatological emergencies in neonates and post neonatal age group were described. Hereditary conditions such as collodion baby, Harlequin's ichthyosis and epidermolysis bullosa formed the largest group (37.5%) of neonatal emergencies. In post neonatal age group dermatitis were common in age group between 1month to 1 year while infections were common in 1 to 5 years and drug reactions were common in between 5 to 14 years (4).

A recent descriptive study by Mathias et al, on paediatric dermatological emergencies published in 2013, 90 consecutive patients less than 18 years of age were included over a period of 18 months. Majority were primary skin infections (40%) with staphylococcal scalded skin syndrome being the most frequent. The next most common entity was adverse drug reaction seen in 13.33% of patients with Stevens Johnson syndrome and toxic epidermal necrolysis being the most frequent. Some of the other conditions included purpura fulminans, congenital dermatoses, vasculitis and angioedema contributing to 12.22%, 11.11%, 8.90% and 6.67% respectively (3).

Common dermatological conditions presenting to the paediatric emergency department are discussed below.

Urticaria and Angioedema:

Urticaria is a descriptive term for recurrent wheals of the skin characterised by pruritic, pink or pale swellings of the superficial dermis while angioedema causes deep swellings of the dermis, subcutaneous or submucosal tissues which are usually painful, rather than itchy, poorly defined and normal in colour. Determining the underlying aetiology and removing any contributing external factors remain the most important factors in treating urticaria and angioedema of which angioedema is considered as a dermatological emergency and patient should be admitted promptly for treatment. Almost any drug can cause urticaria or angioedema and hence any potential offending agents should be stopped (11). Non or low sedating H 1 antihistamines are the first line drugs and H2 antagonists may be added if there is little or no response. Steroids are indicated in case of insufficient response to antihistamines or in patients with associated angioedema (11).

In a study done in France, common viral illnesses and bacterial infections (e.g.urinary tract infections) were the leading identifiable trigger for acute urticaria in 57 children between the ages of one and three years who presented to an emergency department (10). Another study evaluated 88 children presenting to an emergency department with delayed cutaneous reactions while on beta-lactam antibiotics. Of them, 47 of 88 (53.4%) patients had urticarial eruptions. All were

investigated for common childhood viral infections and then later evaluated for drug allergy with blood investigations followed by drug challenge. Two-thirds had one or more positive viral markers and when the children were later challenged with the culprit antibiotic, only four had recurrent urticaria. Thus urticaria was related to the viral infection or the combination of the viral infection and the antibiotic in most, and only 4 of 88 had a proven drug allergy (12).

A retrospective study done in Philadelphia, reviewed the etiology and outcome of 10 children (7 boys and 3 girls) with a mean age of 7.7 years admitted with angioedema. Food was found to be the causative in 4 children (40%) insect bite in 3 (30%), infection in 2 (20%), and one had an oral antibiotic allergy. All the 10 children improved with pharmacological treatment with none requiring intubation or tracheostomy however one child required treatment in intensive care unit (13). A more recent study published in 2013 which evaluated the etiologies in 69 children who were diagnosed with urticaria in whom infections were the commonest cause followed by drugs and food (13).

A retrospective study from central Taiwan evaluated the etiology of first attack of acute urticaria in 953 children presented to the PED. The most common etiology noted were infections (48.4%) followed by foods (23.5%), idiopathic (13.2%) and drugs (11.5%). Respiratory tract infections were common among infections while seafood and NSAIDs contributes the majority among food and drug allergy respectively. Infections were common etiology among infants while medications contribute a majority among adolescents (14).

Erythema multiforme:

Erythema multiforme is considered as an acute and immune-mediated, mucocutaneous condition caused most commonly by herpes simplex virus (HSV) infection or intake of certain drugs (15). Erythema multiforme major involves mucosa while minor occurs in the absence of mucosal involvement. Some of the etiological factors include infections, drugs, autoimmune disease, malignancy and even immunisation. Of the above factors, infections constitute upto 90% of them with HSV being the most common followed by Mycoplasma pneumoniae. Among the drugs nonsteroidal anti-inflammatory drugs, antiepileptics and antibiotics constitute the major causative agents (14).

The skin lesions begin as erythematous, edematous papules which usually enlarge and develop into targetoid lesions which are characterised by a central dusky area or blister due to epidermal necrosis surrounded by edematous ring and a zone of erythema at the periphery (3). Sometimes atypical targets with only two zones or poorly defined margins can also occur. Lesions are most commonly noted on acral and extensor aspect of extremities. In 25 to 60% of patients mucosa may be involved with oral mucosa being the most commonly affected.

Tzanck smear, PCR swab for herpes, chest radiograph, PCR testing of throat swabs and cold agglutination are recommended as apart from routine investigations like blood counts to find out the underlying etiology. Management

includes avoidance of inciting factors such as drugs, antiviral suppressive therapy, oral antibiotics, topical steroids and oral steroids in patients with severe mucosal disease (15).

In a retrospective analysis of erythema multiforme in 30 children ranging from 1 month to 15 years of age, the most common etiology noted was intake of anticonvulsant medications followed by mycoplasma infection (16). All the children improved with treatment without any complications. Another retrospective study done in a tertiary paediatric hospital in Israel reviewed the precipitating factors in children admitted with a diagnosis of non-bullous erythema multiforme from 2001 to 2011. A total of 97 patients were included in whom drugs(most common being pencillin) were the most common cause followed by infections like Epstein-Barr virus, Mycoplasma pneumonia and herpes simplex (15).

Steven Johnson syndrome and Toxic epidermal necrolysis:

Toxic epidermal necrolysis (TEN) and Steven Johnson syndrome (SJS) are usually a reaction to drugs although infections like Mycoplasma pneumonia and herpes simplex virus have also been proposed as an etiology in children(16). SJS affects less than 10% while TEN involves more than 30% of BSA (17). TEN often starts with mucosal inflammation, malaise and pyrexia and the skin may show target lesions or ill-defined erythematous or purpuric macules initially especially on the limbs which may become severe with generalized erythema, positive Nikolsky's sign and large area of necrotic epidermis which may peel off (18). TEN

occurs secondary to keratinocyte apoptosis through pathways such as the Fas ligand activation with release of destructive proteins like granzyme B and perforins from cytotoxic T cells.

Clinical outcome in TEN depends on rapidity of treatment initiation and quality of care given. The most common causes of death in TEN are secondary to multiorgan failure or septicaemia. Damage to the mucosal membranes can lead to gastrointestinal haemorrhage, genitourinary, ocular complications and even respiratory failure. Cutaneous complications include hyper or hypopigmentation, hypohidrosis, alopecia, nail dystrophy, xerostomia and vulvovaginal synechiae.

The reported prevalence of SJS and TEN in children is 1 to 7% and the incidence is 0.4 to 1.5 cases per million people per year with an approximately equal incidence in males and females (16). A retrospective study from Boston by Finkelstein et al in children admitted with diagnosis of SJS and TEN evaluated the etiologic agent, recurrences and long term sequelae. A total of 55 cases of SJS (n = 47), TEN (n = 5), or SJS/TEN overlap syndrome (n = 3) were included in whom drugs (antiepileptics, sulphonamide antibiotics) were found to be the most likely etiologic agent in 29 children (53%) followed by infections like Mycoplasma pneumoniae in 12 children (22%), and herpes simplex virus in 5 children (9%). Ten children (18%) had recurrence of SJS in the following years and 26 (47%) children suffered long-term sequelae affecting the skin and eyes (19).

A scoring system, SCORTEN has been proposed to prognosticate patients who present with TEN (20). With increasing scores the

mortality has been shown to be higher. Anti-inflammatory action of systemic steroids used in the early stages of TEN would reduce the degree of skin damage. Also the care of the wounds should be focussed on preventing superadded infections and wound dessication. Strict barrier nursing and use of biological wound coverings are most important methods to prevent infections (21).

A retrospective study done in Canada in 2002 by Forman et al where children who were admitted and discharged with a diagnosis of TEN, SJS or erythema multiforme (EM) over a period of 10 years were reviewed. Among the children diagnosed with SJS or TEN, 21% developed complications and one died due to skin failure (13).

Another study done in Spain in 2013, which reviewed the etiology factors of SJS and TEN in children showed drugs like sulphonamides, anticonvulsants and penicillins are the commonest etiological agents. The study also showed that the incidence was lower in children while the outcome was better when compared to adults (18). Another retrospective study by Hamilton et al, evaluated the outcomes in children admitted with TEN to an intensive care unit in a large tertiary paediatric hospital. There were 10 patients (mean age = 6.6 years) in whom drugs were the most common causative factor (n = 7) and there were no mortalities reported with proper intensive care (22).

DRESS syndrome:

The Drug Reaction with Eosinophilia and Systemic Symptoms syndrome, also known as Drug induced hypersensitivity syndrome which occurs after intake of certain drugs after a brief period of 3 weeks to 3 months is characterised by high grade fever, associated lymphadenopathy (70-75%), with extensive rash which initially starts on face, upper trunk and upper extremities as a symmetrical, pruritic, maculopapular rash which subsequently leads to involvement of lower limbs and finally erythroderma. Some of the other cutaneous manifestations include generalised follicular pustules, erythema multiforme like, vesicles and blisters secondary to dermal edema without any associated epidermal necrosis. Associated angioedema may be a sign of severe reaction and rash resolves with desquamation (23).

There may be associated haematological changes like eosinophilia and atypical lymphocytosis and secondary systemic involvement of liver (50 to 60%), lungs, kidneys, heart and pancreas. Liver is commonly involved in reaction due to aromatic anticonvulsants while renal involvement could occur secondary to intake of allopurinol and interstitial pneumonia could be triggered by minocycline. Recognising this syndrome at an early phase is necessary as some studies have reported a mortality secondary to DRESS syndrome in 10 % (23).Some of the factors involved in the pathogenesis of reaction include specific drugs like aromatic anticonvulsants, HLA association, altered immune response or herpes virus reactivation. Corticosteroids and intravenous immunoglobulin are used in the management of the syndrome.

A study done by Bessmertny et al, in 2001, assessed the outcomes in children diagnosed as drug hypersensitivity syndrome secondary to intake

of antiepileptics like phenytoin, carbamazepine and phenobarbitone. A total of 36 children were reviewed of which 14 met the criteria of drug hypersensivity syndrome presenting with fever, rash, pruritus, urticarial or hepatotoxicity. Some of the other common features seen in these children include lymphocytosis (71.4%) followed by elevated ESR (64.3%), elevated aminotransferases (64.3%), lymphadenopathy (57.1%), eosinophilia (42.8%), increased bilirubin levels (35.7%), and nephritis (7.1%). All the children admitted recovered except one who died secondary to liver failure proving drug hypersensitivity syndrome can be fatal if not recognised and treated early (24).

A retrospective study was done in Chicago in 2009, where data and photographs of 32 children diagnosed with anticonvulsant hypersensitivity syndrome were reviewed. Some of the factors that were reviewed included presentation of the disease, medications implicated, associated complications and outcome. The mean age of children included was 8.9 years. The most common implicated medications were phenytoin, carbamazepine, and phenobarbital. In all patients fever and rash were noted, followed by lymphadenopathy in 84.4%, hematologic abnormalities in 93.8% and hepatic involvement in 90.4%. All the children improved and no deaths were reported (25).

Acute generalized exanthematous pustulosis (AGEP):

AGEP is an acute febrile eruption is characterized by numerous small, primarily non-follicular sterile pustules, arising within large areas of edematous

erythema. It is predominantly drug induced (>90%) though other triggers like infections, vaccines have been reported. Blood neutrophilia and skin biopsy showing accumulation of neutrophils indicate role of neutrophil releasing cytokines by specific T lymphocytes. Clinically it begins with high fever followed by pustules over face and intertriginous areas followed by dissemination. Associated pruritus or burning sensation may be noted. Other additional features include vesicles, purpura and edema of face and hands. After a period of 1- 2 weeks the lesions resolve with superficial desquamation. It has to be differentiated from acute pustular psoriasis of von Zumbusch type. Beta lactam antibiotics and macrolides are the most frequently implicated drugs. The withdrawal of the suspected drug, supportive management and corticosteroids are usually required. A number of case reports including Meadows et al and Nacaroglu have shown the association of AGEP with B lactam antibiotics and infections in children (26,27).

INFECTIONS:

Staphylococcal scalded skin syndrome:

Staphylococcal scalded skin syndrome (SSSS), also known as Ritter disease is a superficial blistering skin disorder occurs secondary to production of exfoliative toxins by staphylococcus aureus which targets desmoglein 1 and thus causes keratinocyte cell attachment in superficial epidermis. It is primarily a disease of infants and young children who have immature renal clearance of exfoliative toxins and lack immunity. There may be a prodrome of malaise, fever, irritability and severe

tenderness of the skin followed by erythema on the head and in intertriginous sites, often with generalization within 48 hours. The skin subsequently develops a wrinkled appearance owing to the formation of flaccid, sterile bullae within the superficial epidermis. Classically, the flexural areas are the first to exfoliate, leaving behind moist skin and thin, varnish-like crusting with characteristic periorificial (e.g. perioral, periocular) crusting and radial fissuring. Nikolsky sign may be elicited and other associated features may include purulent rhinorrhea, poor oral intake and conjunctivitis (28).

SSSS is a clinical diagnosis and cultures from nostrils, umbilicus or conjunctivae may aid in the diagnosis. With proper treatment, SSSS resolves in 1–2 weeks, usually without sequelae. The mortality rate is 3% for children with severe, generalized forms of SSSS requiring hospitalization and parenteral antibiotics. Complications include secondary infections, loss of fluid, temperature dysregulation and electrolyte imbalance. Oral treatment with a β-lactamase-resistant antibiotic (e.g. dicloxacillin, cephalexin) for a minimum of 1 week is usually sufficient for milder disease (29).

CDC criteria for SSSS (28)

Clinical:

a) Temperature > 38.9 C

b) Diffuse macular erythroderma

c) Hypotension for age

d) Desquamation, 1 to 2 weeks after onset, especially palmoplantar.

e) Multisystem involvement

Laboratory:

Negative tests for following:

a) Throat CSF, blood cultures (can be positive for staphylococcus aureus)

b) Serological tests negative for Rocky Mountain spotted fever, measles or leptospirosis.

Confirmed - Laboratory criteria + all 5 clinical criteria
Probable - Laboratory criteria + 4/5 clinical criteria.

A retrospective study was done in France between 1997 and 2007 where a total of 349 cases collected by the National Reference Centre of Staphylococci were analysed. This study recorded an incidence of 0.56 cases/year/million inhabitants, showing median age of 2 years (30). Another retrospective study done on patients under the age of 1 year hospitalized due to SSSS in the Czech Republic from 1994 to 2009 where a total of 399 children (177 girls and

222 boys) were included. This study showed that mean incidence of SSSS during that period in the Czech Republic was 25.11 cases per 100,000 children under 1 year of age and the mean hospitalization stay duration was 6.39 days, and all the 399 children improved with treatment (31).

A total of eight cases with SSSS were reviewed in a retrospective study by Avabratha et al, in India over a span of 2 years. All the children were less than 1 year of age in whom 25% had a positive blood culture for Staphylococcal aureus and 37% had a positive pus culture. All the children responded to common antibiotics and recovered completely. Thus early recognition and appropriate management had a greater impact on clinical outcome in children admitted with SSSS (32).

Rickettsial infection:

One of the common cause of exanthem include rickettsial infections which after an incubation period of 3 to 21 days presents with high grade fever usually abrupt in onset along with headache and myalgia. Rash usually begins after 3-5 days of onset of fever as blanching, discrete macules over ankles, lower legs and wrists which may become maculopapular, petechial or hemorrhagic and is seen neither at presentation nor in all patients. Presence of rash on the palms and soles is highly characteristic. In the typhus group rash starts on the trunk with centrifugal spread sparing palms and soles. Palpable purpura may also be seen in some cases and occasionally petechiae noted may enlarge to form ecchymotic lesions and gangrenous

patches. A necrotic eschar at the site of inoculation is seen in scrub typhus, tick typhus and rickettsial pox. Associated systemic symptoms include vomiting, diarrhoea and abdominal pain. Complications like interstitial pneumonitis, acute renal failure and meningoencephalitis are also reported. Doxycycline at a dose of 5mg/kg/day is the drug of choice is the drug of choice (33).

A retrospective study was done in 2015, in India, for a period of 18 months to evaluate the complications and outcomes secondary to rickettsial infections in children. In this study 30 children who were hospitalized with pyrexia of unknown origin and diagnosed as having rickettsial infection by their classical clinical manifestations and serological tests were included. Of the total, 14 (46.7%) were diagnosed as having scrub typhus, 8 (26.7%) as having spotted fever (26.7%), typhus in 2 (6.6%) and 6 (20%) of them showed mixed features. Cutaneous lesions were recorded in 25 cases (83.3%) and all of them improved with doxycycline therapy.

Another prospective observational study from north India, which evaluated the outcome in 66 children admitted with diagnosis of scrub typhus having fever with associated eschar and a maculopapular rash in 20% of patients. 90% became afebrile within 48 hours of treatment but the overall mortality reported was 7.5% (34).

Viral exanthems:

Viral exanthems are the most common cause for fever with rash in children. In some cases the exanthem may be the first presenting symptom and it may

or may not be associated with pruritus. Some of the most common causes include measles, rubella, varicella zoster virus and enteroviruses (33) . In one retrospective study, the prevalence of viral exanthems in paediatric emergency department was 13.2% (5).Varicella infection was the most commonest seen in 5.2% of the total patients followed by hand, foot and mouth disease (HFMD) in 4.5% and nonspecific viral exanthem contributing to 2.75%. Most of the viral exanthems are self-limiting without serious complications. Children infected with herpes simplex infections harbor latent infection known to cause recurrences(36).

Measles is one of the major causes for morbidity in children especially in developing countries. It is transmitted by droplet infection commonly affecting children between 6 months and 3 years of age. It starts with a prodrome of fever, cough, rhinorrhea and conjunctival congestion. Koplik spots are pathognomonic presenting as greyish white lesions with surrounding erythema in the buccal mucosa opposite the lower second molar tooth. Rash starts on the 4^{th} day of fever beginning behind the ears and progresses downward and then resolves with residual brownish discoloration and desquamation over the next 10 days(37). Vashishtha et al, show that in India, 80000 children per year die due to measles with its complications amounting up to 4% of under five deaths and the median case fatality ratio of measles is 1.63% (36).

Varicella is an acute exanthem caused by primary varicella zoster virus infection of a susceptible individual which occurs most commonly in childhood. The skin lesions which range from scattered pruritic rose coloured macules to papules, vesicles, pustules, and crusts start usually on scalp and face spreading rapidly to trunk

with relative sparing of extremities. The presence of lesions in all stages of development is a hallmark of varicella. A prospective study done over a period of 1 year in France evaluated the rate of hospital admissions due to varicella in children < 16 years where 143 out of 405 children diagnosed as varicella or herpes zoster required admission. The most common cause of admission was due to secondary infection of skin (38). If mother gets varicella during the first 20 weeks of pregnancy there is a risk of developing congenital varicella syndrome in up to 2% and if she acquires between 5 days before and 2 days after delivery there is chance of development of severe neonatal varicella. Some of the complications include hepatitis, glomerulonephritis, thrombocytopenia , optic neuritis, keratitis, arthritis, myocarditis, pancreatitis and vasculitis (38) .

HFMD is a common and recognizable exanthem caused by viruses in the Enterovirus group the most common being Coxsackie A 16 and human enterovirus 71 (39). After an incubation period of 3-7 days it may start as fever with associated lymphadenopathy followed by appearance of small oval, gray vesicles over palms and soles and then over buccal mucosa, tongue 1-2 days later. In most cases the condition is self-limiting requiring only supportive treatment. Rarely complications like meningoencephalitis or myocarditis can occur. The case fatality rate ranges from 0.06 to 0.11% with reports of enterovius 71 having fatal outcomes (40). Diagnosis of HFMD is usually clinical with most of them requiring only supportive management. Gianotti-Crosti syndrome or papular acrodermatitis of childhood occurs secondary to viral infections like coxsackievirus, hepatitis B, cytomegalovirus and EBV. It starts

with a prodrome of fever followed by symmetric, homogenous, flat topped papules on cheeks, extensor extremities and buttocks lasting for 15 to 20 days (35).

Dengue fever also present with an exanthem which starts as flushing erythema of face occurring before or within 24-48 hours of onset of symptoms. After 3 to 6 days, aymptomatic morbilliform or maculopapular exanthem can develop which in some cases may coalesce to form generalized erythema with petechiae sparing palms and soles. Hemorrhagic manifestations like petechiae, purpura or ecchymosis can also occur. Involvement of mucosa can also occur in 15 to 30 % presenting as scleral and conjunctival injection, erythema of lips and tongue (41).

Vasculitis in children:

Vasculitis is rare in the paediatric age group with an estimated incidence of about 50 cases per 100,000 children per year. Vasculitis is defined as the inflammation in a blood vessel occurring as a primary process or secondary to an underlying disease. Early recognition and management of these are essential as they can lead to life-threatening conditions when not managed appropriately. It is proposed that abnormalities in the regulation of immune complex formation may be a contributory factor in HSP. The skin lesions starts 7–10 days after the trigger as palpable or macular purpura though other forms like urticaria, pustules, petechiae, vesicles or targetoid lesions are also reported. They start on dependent sites like lower limbs and progress. Associated systemic symptoms include abdominal pain and

vomiting (35-85%) and joint pain (60-84%). Vasculitis may occur secondary to infection, drug intake, malignancy or connective tissue diseases like systemic lupus erythematosus (42).

Evaluation for vasculitis includes complete blood count, C reactive protein, ESR, liver and renal function tests and specific testing like antinuclear antibodies (ANA), ANCA, serum complement levels depending upon the type of vasculitis under consideration. Skin biopsy can be considered as the gold standard for diagnosis of cutaneous vasculitis. Treatment options include removal of the inciting agent and in severe or persistent cutaneous disease drugs like non steroidal anti-inflammatory drugs, dapsone, colchicine and antihistamines can be used. In patients with fulminant or progressive disease or with end organ involvement, immunosuppressive like corticosteroids or cytotoxic agents can be used.

The incidence of vasculitis is rare in children as shown by the following two studies:-

- A survey of family clinicians showed that the estimated overall incidence of new cases of vasculitis was 53.3 per 100,000 children under 17 years of age over a period of 1 year and the two most common ones noted were Henoch-Schönlein purpura and Kawasaki disease.
- Another study done in a tertiary hospital from the Czech Republic showed an estimated annual incidence of vasculitis was 12 per 100,000 children under 17 years of age (27). A more recent study done in North America in 2013 showed that among the primary vasculitis, the most common are Henoch Schönlein

purpura (HSP) and Kawasaki disease (KD) contributing up to 49% and 23% of the total (43).

A retrospective study from Italy evaluated the clinical, laboratory data and outcome of 150 children with HSP. The mean age was 6.1 years. Purpuric lesions were seen in all the patients and it was the presenting symptom in 74% of them with arthritis/arthralgia being the most common associated systemic symptom (44).

A retrospective study done at a tertiary hospital in Saudi Arabia to evaluate the clinical presentations and complications in children diagnosed with HSP. A total of 29 children with a mean age of 7.5 years were reviewed of which 82% had joint involvement, 72.4% had gastrointestinal complaints while 24.1% had renal involvement. However, all the patients recovered within a month (45).

Kawasaki's disease (KD):

KD in children is usually characterised by 3 phases:

The first phase begins with an abrupt onset of high grade fever lasting up to 7-14 days. Other signs and symptoms associated may be uveitis, non-exudative bilateral conjunctivitis, perianal erythema, strawberry tongue, edema of hands and feet, myocarditis and lymphadenopathy. This is followed by desquamation of the digits and coronary aneurysms. Finally complete resolution of all signs occurs. Cardiac complications occur in the form of aneurysm, infarction or myocarditis.

Treatment includes high-dose aspirin (80–100 mg/kg/day) and IVIG (2 g/kg) and in resistant cases corticosteroid pulse therapy (30 mg/kg for 1–3 doses) or infliximab (5 mg/kg) may be considered.

EULAR criteria for Kawasaki's disease:

Fever persisting for atleast 5 days plus 4 of the following:

1) Bilateral conjunctival injection

2) Changes of the lips and oral cavity

3) Cervical lymphadenopathy

4) Polymorphous exanthem

5) Changes in the peripheral extremities or perineal area.

A total of 69 children diagnosed with Kawasaki's disease were evaluated in a study from North India. Mean age of children was 4.9 years and skin rash was seen in 43 of them. All the children improved with medical management (46). Another retrospective study was done on cutaneous presentations of Kawasaki's disease where a total of 30 patients were included. All the patients had a polymorphous exanthem with 7 developing vesicles, purpura or pustules during their

course of illness. Perineal eruption was seen in 17 of them and cheilitis was noted in 93% of them (47).

Purpura fulminans:

The reported incidence of purpura fulminans in paediatric emergency department in a study done in India was 12.2% (3). Purpura fulminans is a severe skin disorder characterised by widespread cutaneous haemorrhage and associated disseminated intravascular coagulation typically seen in infants and children. It occurs usually after infection, following sepsis or in neonates. Meningococcal sepsis is the most common followed by other gram-positive and gram –negative infections. Neonatal purpura fulminans which occurs secondary to protein C deficiency usually develops within 72 hours after birth presenting as multiple purpuric lesions over perineal region, the flexor surface of the thighs, and abdominal skin which enlarge to form hemorrhagic bullae followed by subsequent necrosis and eschar formation. In the idiopathic type lesions develop 7-10 days after the onset of the precipitating factor. Post infectious purpura fulminans occurs commonly following streptococcal or varicella infections and it usually presents within 10 days of an antecedent illness. Thus purpura fulminans is characterised by 4 primary features:

1) Large purpuric skin lesions

2) Hypotension

3) Disseminated intravascular coagulation

4) Fever

A study done in Turkey in 2005 to evaluate the outcomes and associated disorders in 16 children with purpura fulminans ranging in age from 3.5 months to 12 years showed infection as the most common cause noted in 9 (56%) children that included staphylococcus sepsis and meningococcemia. Also 10 of the 16 patients (62.5%) required amputation,1 underwent skin grafting thus making an overall morbidity of 68.5% and remaining 5 children (31%) recovered completely without any complications (48).

Another retrospective study published in 2007 which analysed the outcomes and clinical manifestations of 12 patients diagnosed as purpura fulminans associated with peripheral gangrene. The most common etiology noted was secondary to infections seen in 9 patients out of the total. Three of them died (25%), 8 required amputation of at least 1 limb while 4 underwent amputation of all 4 limbs (49).

Systemic lupus erythematosus (SLE):

Systemic lupus erythematosus is a multisystem disorder with varied clinical manifestations. SLE in children is rare with reported incidence of 0.3-0.9 per 100,000 children and prevalence of 3.3-8.8 per 100,000 children. In most studies the age at onset reported were between 11-12 years and also 80% of them were females (50) . A retrospective study done in France on childhood onset SLE showed hematologic abnormalities (72%) as the commonest manifestation followed by cutaneous findings (70%). The malar rash noted in 50-60% of children with SLE is

one of the characteristic features of SLE. It presents as an erythematous, non pruritic and raised rash over the malar prominences extending over the nasal bridge with sparing of nasolabial folds. Discoid rash is a rare manifestation in children seen in only upto10%. Non scarring alopecia though common is not specific for SLE and it presents as thinning of temporal areas of the scalp. Mucosal involvement presents as painless ulcers of palate or nasal septum (51).

A retrospective study published from Iran where 48 children diagnosed with SLE under 16-yrs of age were evaluated for the clinical manifestations. Cutaneous changes were found in 87% of them with malar rash being the most common noted in 36 (76%) of them followed by photosensitivity in 24 (50%), cutaneous vasculitis in 19 (39%), alopecia in 14 (29%) and discoid LE lesions in 7(14%). Cutaneous manifestations are more common in paediatric SLE as compared to adults with the exception of discoid lupus erythematosus (DLE) lesions which occurs in only less than 5% of patients. Probability of DLE progressing to SLE in children is higher (25 to 30%) when compared to adults (5 to 10%) (52). The most common involved organ in SLE is kidney and nephritis manifested within a year in 90% of patients diagnosed with renal lupus presenting in the form of proteinuria or hematuria. Hypocomplementemia is a marker for presence of active renal disease. There are few reports from Canada where renal and neurological involvement were more in children (33). Anaemia is the commonest of haematological abnormalities seen in 80% of patients followed by leucopenia and thrombocytopenia the incidence of which is more in children compared to adults (34). Production of antibodies to the cell nucleus referred to as ANAs constitutes the hallmark of SLE and is seen in upto

95% of patients with SLE. Anti-dsDNA and anti-Sm antibodies are highly specific for SLE. Over the past 3 decades, the prognosis of children with SLE has improved and with early recognition and referral to appropriate specialists, the children can be treated effectively and end organ damage can be minimised.

A study done in Madhya Pradesh between 2001 to 2015 analysed medical records of children and adolescents (5-16years of age) admitted with the diagnosis of SLE in a tertiary hospital. A total of 23 patients (18 girls and 5 boys) were included, in whom arthralgia and facial puffiness were the commonest presentations noted. Fourteen of the twenty three patients went into remission while three died due to sepsis and one died due to active lupus.

In a recent retrospective study published in June 2016, analysing emergency department utilization of paediatric dermatology consultations, they found that majority of cases were managed by paediatricians and emergency medicine physicians. As the most common diagnosis encountered were infectious diseases and inflammatory disorders like atopic dermatitis, they were of the opinion that dermatology educators should emphasize the evaluation and management of more commonly encountered disorders including infectious diseases with cutaneous manifestations, inflammatory and eczematous disorders, infestations and drug reactions in addition to disorders with potential for significant morbidity and mortality(10).

MATERIALS AND METHODS

Study design:

Hospital based cross sectional study of children with skin manifestations. A subset of admitted patients were followed up till discharge.

Setting:

Paediatric emergency department of Christian Medical College Hospital

Period of recruitment:

1 year - August 2015 till July 2016

Patients:

Study population: Patients with cutaneous manifestations presenting to paediatric emergency department of Christian Medical College Hospital.

Inclusion criteria:

a) Patients presenting to PED with skin manifestations.

b) Those who were detected to have skin manifestations by the examining doctor.

c) Those who developed skin lesions while under observation in PED.

Exclusion Criteria:

1) Patients with cutaneous manifestations secondary to trauma.

2) Adult patients (Age > 16 years).

3) Patients unwilling to participate in the study.

OUTCOME MEASURES:

The following parameters were planned and specifically assessed in the study:

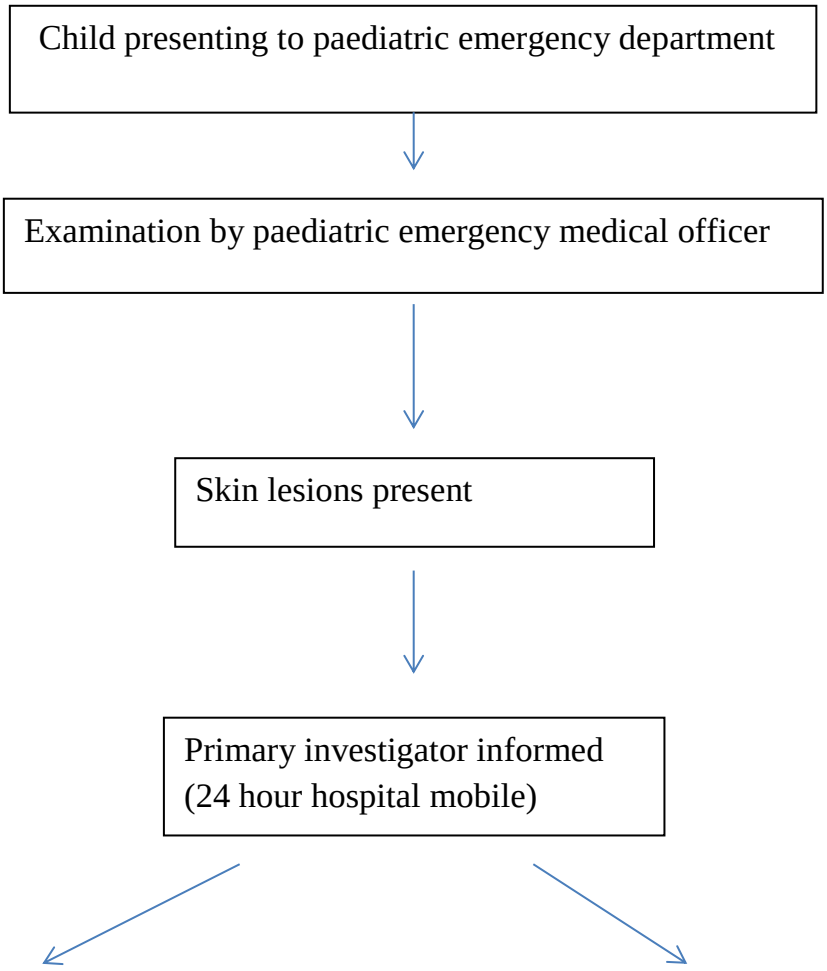
1) Description of the spectrum of skin lesions and related systemic manifestations in these patients.

2) Assessment of the impact of skin lesions on clinical outcome in patients who were admitted to hospital.

METHODS:

Step 1: Identification and recruitment of patients:

All patients presenting to the paediatric emergency department were evaluated by paediatric emergency medical officer. If skin lesions were present the primary investigator was informed (24 hour mobile on call) for evaluation. All patients with skin lesions and consenting to be in the study were recruited.



Inclusion:

a) Patients presenting with cutaneous manifestations

b) Detected to have skin disorders by examining doctor

c) Developed skin lesions while observation in emergency department

Exclusion:

a) Adult patients

b) Cutaneous lesions secondary to trauma

c) Unwilling for participation

STEP 2: Data collection

The following data were entered in a proforma (Annexure 2):

1) Demographics -age, sex, hospital number

2) Presence of skin lesions, its duration, nature and extent of dermatological findings

3) Associated systemic symptoms and comorbidities

4) Diagnosis was established by standard criteria for the following entities:

- DRESS syndrome - Annexure 1A
- SLICC criteria (SLE) - Annexure 1B
- ACR criteria (HSP) - Annexure 1C
- SIRS criteria - Annexure 1D

5) Abnormal laboratory investigations included

a) Total white blood cell (WBC) count (≤ 4 years->15500, 5-7 years- >14500, ≥ 8 years- >13500)

b) C reactive protein (CRP) (> 10 mg/L)

c) Urine for WBC's (>5/high power field)

d) Hepatic function tests (serum glutamic-pyruvic transaminase > 50 IU/L and serum glutamic oxaloacetic transaminase >60 IU/L)

e) Cultures for bacterial infections

f) Serology (e.g. IgM Dengue/Measles, ANA for lupus erythematosus)

g) Skin biopsy for cutaneous small vessel vasculitis

h) Duration of hospitalization and clinical outcomes at discharge -improved / not improved/mortality, in admitted patients

Step 3: Categorization of patients

The skin lesions were categorized into 7 groups as follows (37):

Category 1- Skin manifestations secondary to infections

Category 2 - Inflammatory disorders

Category 3 - Disorders of epidermal differentiation and keratinization

Category 4 - Connective tissue diseases

Category 5 - Coagulation disorders

Category 6 - Immunobullous disorders and

Category 7 - Skin appendageal disorders

Step 4: Sample size

With expected prevalence of skin lesions to be 4.7% (28), the minimum required number of subjects to be screened for the present study are n=6883

Single Proportion - Absolute Precision

Expected Proportion - 0.047

Precision (%) - 0.5

Desired confidence level (1- alpha) % - 95

Number of patients to be screened - 6883

The formula used for the calculation is n=4p (1-p)/d2, p (prevalence) = 0.047

STATISTICAL ANALYSIS:

Frequencies and percentages were used to measure the prevalence of skin lesions. Spectrum of skin conditions were presented with same descriptive statistics. The continuous measurements were presented using mean (SD) or median (IQR). Time series analysis of total monthly visits and monthly viral infections were performed using sequence chart and the difference between the first season and second season were analysed using segmented regression analysis and significance calculated. The association between the outcome and other categorical variables were assessed using a chi-square test and Mann-Whitney U test. The data entry was done using Epidata 3.1 software and data analysis by using Microsoft Excel and SPSS 16.0 software.

Funding:

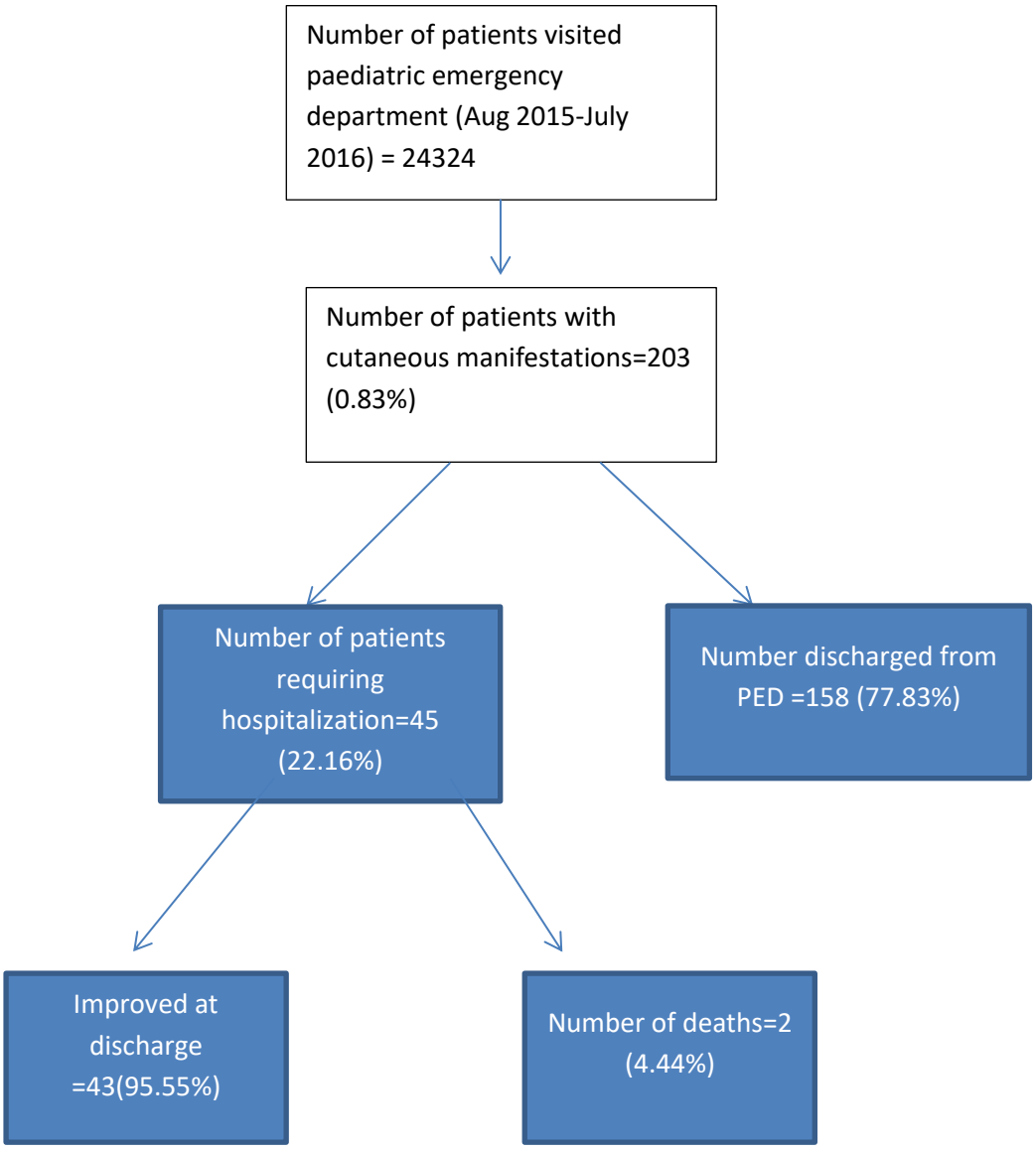
The study was funded by the Fluid research grant of CMCH, Vellore.

Institutional Research Board Approval and Ethical considerations:

Institutional Research Board (IRB) approval (IRB no-9572) was obtained prior to commencement of the study. Consent was obtained from patient or parents for the inclusion of the study (Annexure 3,4).

RESULTS

During the study period of 1 year (August 2015-July 2016), 24324 patients were seen in the paediatric emergency department of whom 203 patients (0.83%) with cutaneous manifestations were referred to the primary investigator.



Basic demographics:

The age and gender distribution of the patients is shown in Figure 1.

Age:

The mean age (SD) of the 203 patients included in the study was 4.88 (±4.04) years (range 1 month – 15 years). The majority of patients (43.84%) were in the age group of 1 to 5 years.

Gender Distribution:

There were 125 (62%) males and 78 (38%) females (M: F ratio= 1.60: 1).

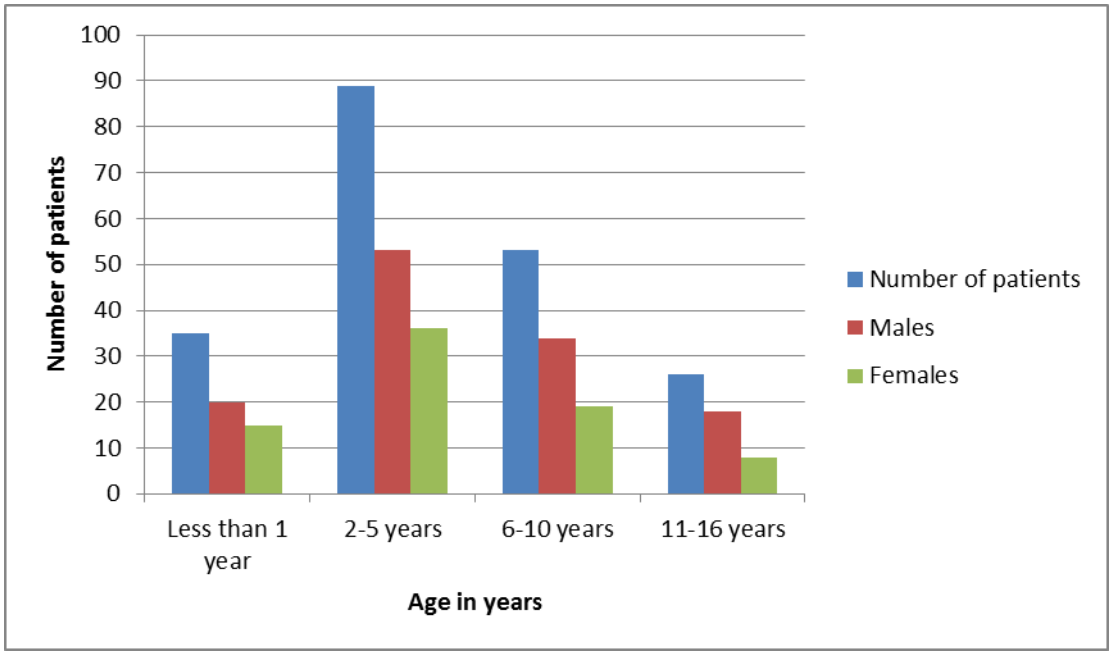


Figure 1: Distribution of age and gender of patients

Distribution of cases on monthly basis:

We evaluated seasonal variations in consultations for skin diseases. It was seen that the prevalence of skin diseases was higher in the months of January (10.83%), March (10.34%) and May (10.83%) as compared to the remaining months (P value=0.227). Also it was noted that viral infections were more frequent during summer (25/51, 49.01%) when compared to the other months (35/152, 23.02%) (P value =0.024)

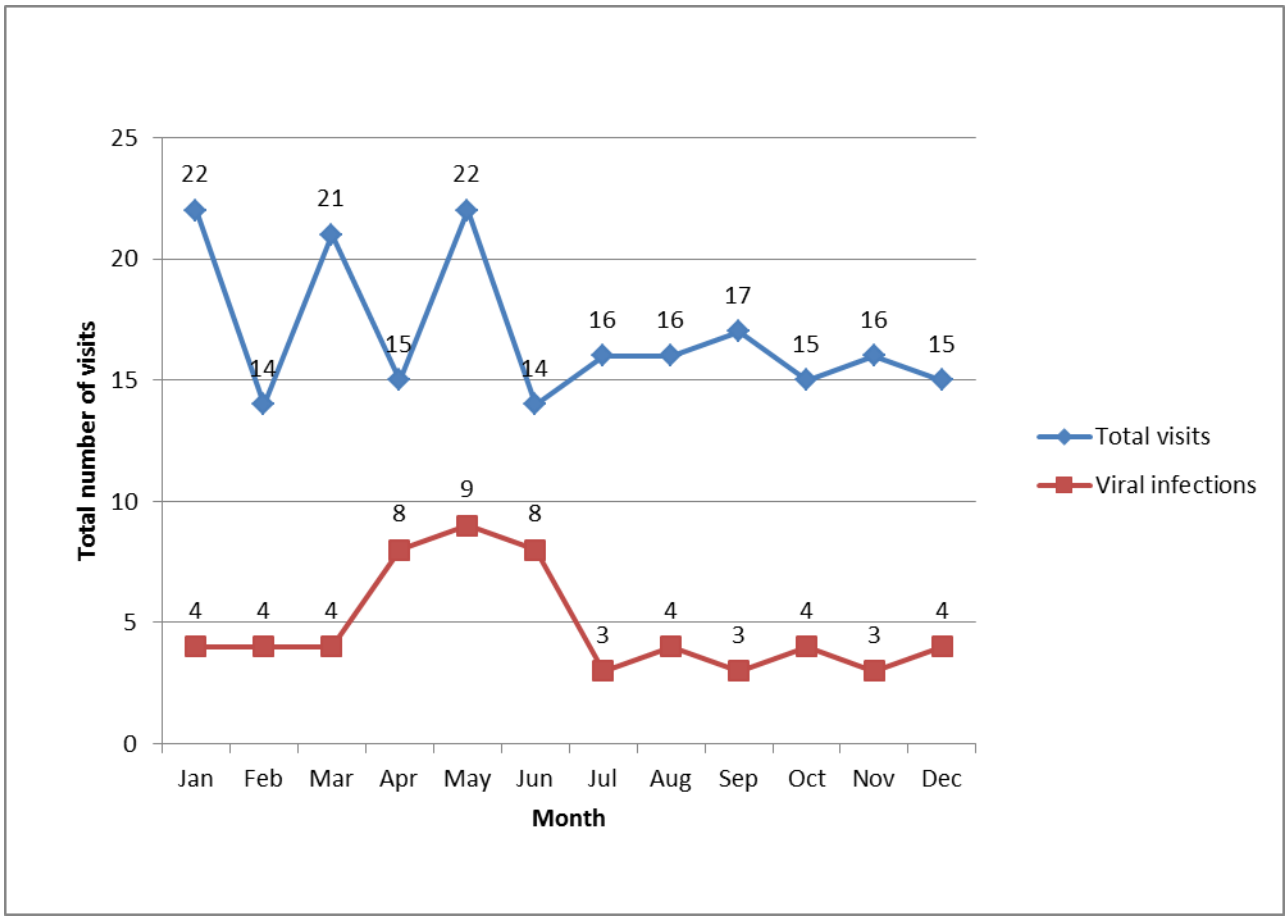


Figure 2: Monthly distribution of paediatric emergency department visits

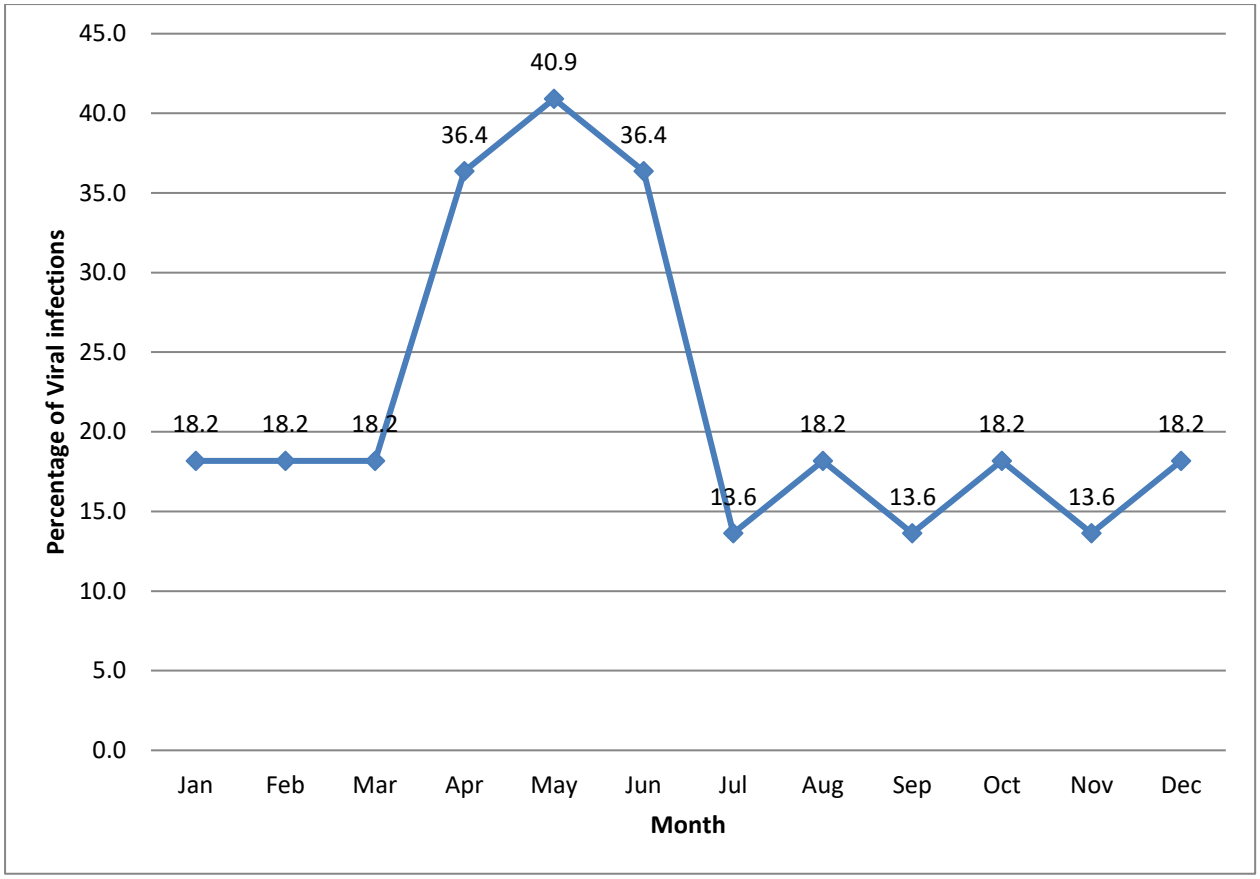


Figure 3: Percentage of viral infections seen during the year

Spectrum of skin manifestations:

The skin lesions were categorised into 7 categories (37). Of the 203 patients, 50.24% (n=102) had skin manifestations secondary to inflammatory disorders, 44.82 % (n=91) had infections, followed by disorders of epidermal differentiation and keratinization in 2% (n=4), connective tissue diseases and skin appendageal disorders in 1% each (n=2), immunobullous and coagulation disorders in only 0.5% each (n=1). Although, overall, inflammatory disorders were the most common cause of PED visits, in the age group 1- 5 years, infections were noted to be the most common cause (P=0.006).

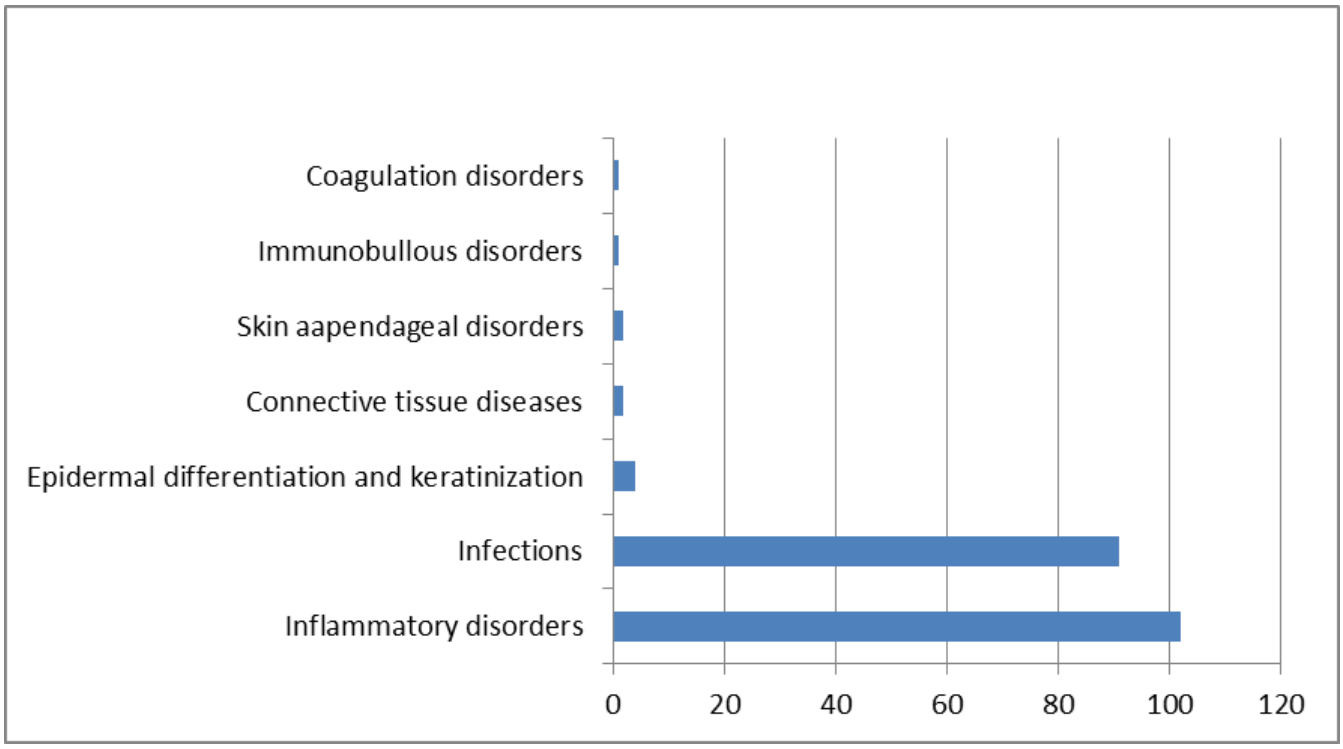


Figure 4: Distribution of skin lesions based on category

Hospitalization:

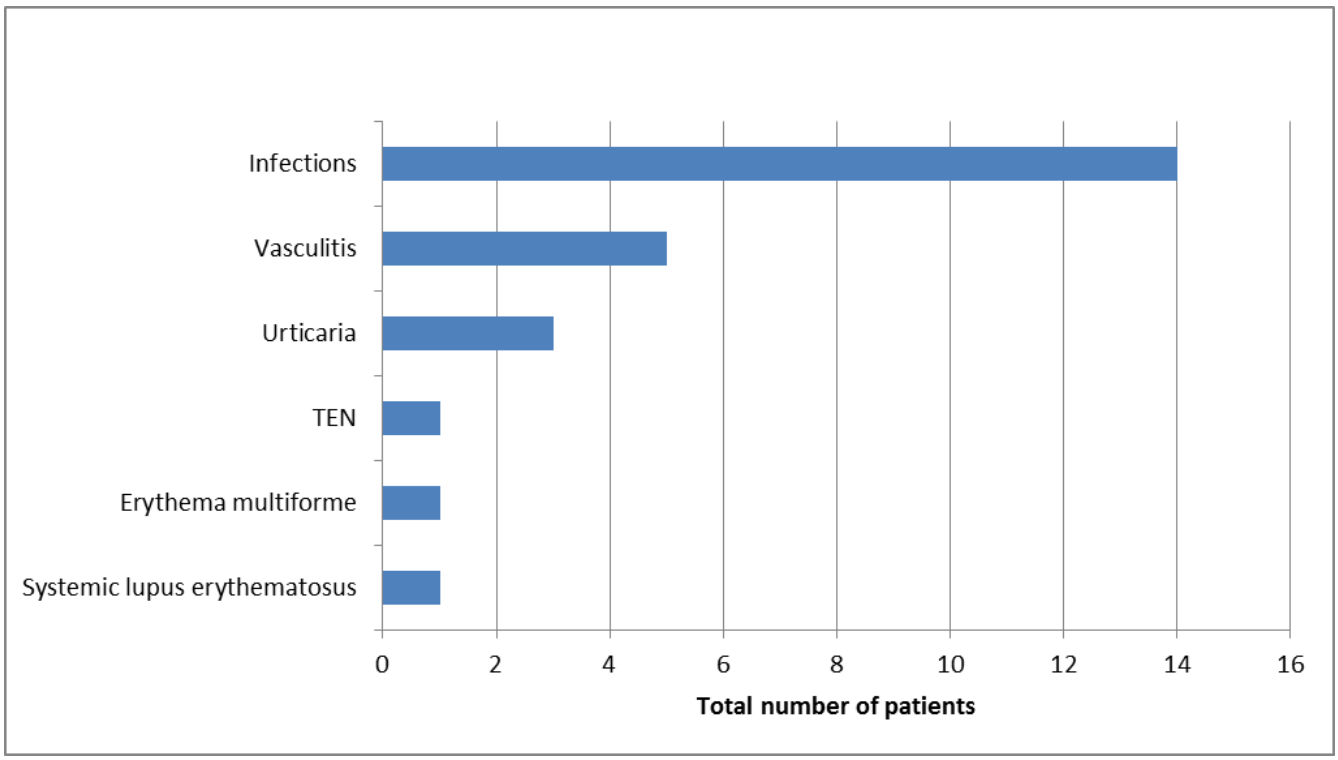
45/203 (22.16 %) patients required hospitalization. The diagnosis included those with primary dermatological diseases like TEN (n=3), DRESS (n=4), erythema multiforme (n=4), AGEP (n=1), SSSS (n=7), paraneoplastic pemphigus (n=1) and staphylococcal scarlatina (n=1) in a patient with MRSA induced omphalitis. The other conditions included viral exanthems like dengue (n=3), measles

(n=2) and, febrile exanthem (n=2), Henoch Schonlein purpura (n=6), Kawasaki's disease (n=2), purpura fulminans (n=2), urticaria (n=5), systemic lupus erythematosus (n=1) and anaphylaxis (n=1). The mean duration of hospital stay in patients with a primary dermatological diagnosis was higher (4.56 days) compared to the other patients (3.83 days) but was not statistically significant (P =0.503). Also the age of hospitalized patients was significantly higher (6.11 years) than those children who were not hospitalized (4.44 years) (P =0.013).

Prevalence of systemic complaints and association with systemic inflammatory response syndrome:

116/ 203(57.14%) patients with dermatological problems had associated systemic symptoms and signs. 45/203 patients required hospitalization of whom 25 (55.55%) patients (males 19, females 6) satisfied the criteria for systemic inflammatory response syndome(53).14/25 (56%) patients had infections, 5/25 (20 %) had vasculitis, 3/25 (12%) patients had urticaria while erythema multiforme, toxic epidermal necrolysis and systemic lupus erythematosus were seen in 1(4%) patient each. Spectrum of skin conditions associated with SIRS is shown in Figure 5.

Figure 5: Spectrum of skin conditions associated with SIRS in patients requiring hospitalization



The associated systemic symptoms and abnormal laboratory investigations in patients with SIRS are summarized in table 2.

Table 2: Systemic symptoms and abnormal investigations in patients with SIRS

Systemic signs and symptoms	**Total number (%)**

a) Fever	25 /25 (100%)
b) Gastrointestinal	10/25 (40%)
c) Respiratory	3/25 (12%)
d) Joint	2/25 (8%)
Relevant abnormal laboratory results	**Abnormal/total done**
a) Total WBC	22/25 (88%**)**
b) Differential count	16/25(64%)
c) CRP	13/ 16 (81.25%)
d) LFT	5/18 (27.77%)
e) Culture positivity: Blood	N= 2(N.meningococci, Gram negative bacilli)
Pus	N=3 (Methicillin resistant staph aureus)

In patients with SIRS, fever was the most common symptom present in all patients followed by gastrointestinal in 40%, respiratory in 12% and joint involvement in 8%. Among the abnormal laboratory parameters, were elevated total WBC count and CRP. The mean hospital stay was 4.41 days (range 2-16 days) in those with SIRS while in those without SIRS it was 3.12 days (range 2-4 days).The difference in the mean (IQR) in the hospital stay for patients in SIRS and without SIRS was not statistically significant (P =0.552).

Inflammatory disorders:

102 (M 62, F 40) patients (50.24%) had skin lesions secondary to inflammatory disorders (Figure 5).The most frequent among them was urticaria (n=45 patients). The other entities included papular urticaria (n=20), vasculitis (n=9), erythema multiforme (n=5), DRESS syndrome (n=4), seborrheic dermatitis (n=4), drug induced exanthem (n=3), toxic epidermal necrolysis (n=3), eczema (n=3), pityriasis rosea (n=3), Stevens Johnson syndrome (n=1), anaphylaxis (n=1) and lichen striatus (n=1).

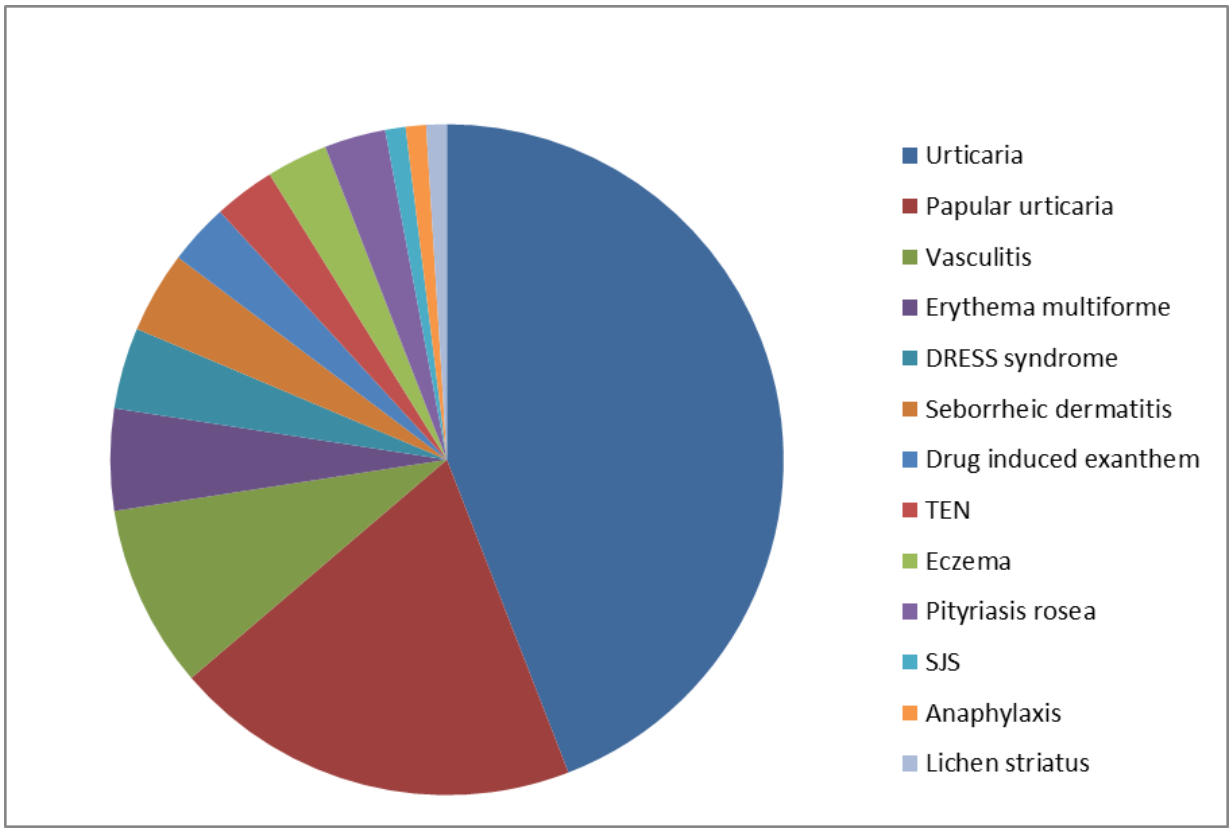


Figure 6: Distribution of patients with inflammatory disorders

i) Urticaria and angioedema:

45 patients (M 28, F 17) had presented with urticaria, of whom 1 had associated angioedema. One patient who had anaphylaxis induced by cefazolin had urticaria as a part of the symptom complex. Infectious etiology was proven in 13 patients which included urinary tract infection in 9 and upper respiratory infection, impetigo, oral herpes simplex and gastrointestinal tract infection in one patient each. In 6 patients an infective cause was considered in view of elevated counts, abnormal urine microscopy with elevated CRP. In 4/45 (8.88%) a drug induced etiology was considered.

The suspected drugs included Beta lactam antibiotics in 2, non steroidal anti-inflammatory drugs (NSAIDS) and contrast used for magnetic resonance imaging in one patient each. Twenty eight patients (65.11%) had associated systemic symptoms and 5 patients (11.11%) required hospitalization with mean duration stay of 2.8 days (range 2-5 days). Significantly higher number of hospitalized patients had elevated total WBC count (P=0.014).

Table 3: Comparative clinical and laboratory profile of patients with urticaria - admitted vs. not admitted

Parameters	**Admitted** **(n=5)**	**Not admitted** **(n=40)**

Mean age Range	5.1 years 9 months-10 years	5.5 2 months-13 years
Gender (M/F)	4/1	24/16
Major associated signs and symptoms: a) Fever b) Gastrointestinal c) Respiratory d) Joint pain	 4/5(80%) 3/5 (60%) 1/5 (20%) 0%	 22 /40 (55%) 9 /40 (22.5%) 6/40 (15%) 4/40 (10%)
Relevant abnormal laboratory results: a) Total WBC b) Differential count c) CRP d) Urine for wbc's e) Culture : Blood Urine	**Abnormal/Total** 4/5 (80%) 3/5 (60%) 3/5 (60%) 2/5 (40%) 0/2 0/2	 8/32 (25%) 7/22 (31.81%) 9/30 (30%) 14/25 (56%) 0/4 1/6

ii) Vasculitis:

9 (4.5%) patients (6 males, 3 females) were diagnosed to have vasculitis. 6/9 patients (66.66%) had Henoch Schonlein purpura, 2/9 (22.22%) patients had Kawasaki's disease and 1 patient (11.11%) had cutaneous small vessel vasculitis. 8 /9 (88.88%) patients required hospitalization with a mean duration of stay of 2.44 days (range 3-5 days). The most common systemic symptoms associated were fever and abdominal pain.

Table 4: The demographic profile, laboratory parameters and associated systemic symptoms in patients diagnosed with vasculitis

Parameters	**Henoch Schonlein purpura (n=6)**	**Kawasaki's disease (n=2)**
Mean age Age	7.6 years 2-14 years	1.5 years 1-2 years
Sex(M/F)	3/3	2/0
Systemic signs and symptoms a) Fever b) Gastrointestinal c) Respiratory d) Joint pain	 5 (83.33) 4 (66.66%) 1 (16.66%) 2 (33.33%)	 2 (100%) nil 1 (50%) nil

Relevant abnormal laboratory investigations:		
a) Total WBC	4 (66.66%)	2 (100%)
b) Differential count	4 (66.66%)	2 (100%)
c) LFT	1 (16.66%)	1 (50%)
d) Renal	1 (16.66%)	nil
e) CRP	4 (66.66%)	2 (100%)
f) Biopsy done	4 (66.66%)	nil
g) Direct immunofluorescence (positivity for IgA)	2 (33.33%)	nil

iii) DRESS syndrome:

4 patients (males=2, females=2) were diagnosed with DRESS syndrome. The suspected etiological agents were anticonvulsants with carbamazepine in 2 of them, phenytoin and levetiracetam in 1 each. 3 of them were hospitalized and they all improved clinically at discharge.

iv) Toxic epidermal necrolysis and Stevens Johnson syndrome:

Toxic epidermal necrolysis was present in 3 patients (males=2, females=1). The triggers included Herpes simplex virus 1 and lamotrigene in one patient each, while in the remaining patient a definite etiology could not be established. The mean duration of hospital stay was 15 days (range 4-26 days). The only patient diagnosed as Stevens Johnson syndrome was secondary to phenytoin.

v) Drug induced exanthem:

Three patients had drug induced exanthem , the suspected agents being phenytoin, carbamazepine and cotrimoxazole. The child allergic to cotrimoxazole was also HIV positive.

vi) Acute generalized exanthematous pustulosis:

2 patients both females were diagnosed as acute generalized exanthematous pustulosis with suspected etiological agents being mefenamic acid and albendazole of whom 1 required hospitalization.

The demographic profile, associated systemic symptoms, causative agents and abnormal laboratory parameters of patients with severe drug reactions are summarized in table 5.

Table 5: Comparative data of severe drug reactions

Parameters	DRESS SYNDROME (n=4)	AGEP (n=2)	TEN (n=3)	SJS (n=1)
Mean age	7.25 years	10 years	7.33 years	6 years
Gender(M/F)	2/2	0/2	2/1	0/1
Suspected drug	Phenytoin (1), Levetiracetam (1), Carbamazepine (2)	Mefenamic acid (1) Albendazole (1)	Lamotrigene (1)	Phenytoin (1)
Relevant abnormal investigations (Abnormal/total)				
a) Total WBC	3 /4(75%)	2 (100%)	2 66.66%)	1(100%)
b) Differential	4/4 (100%)	1 (50%)	1 (50%)	nil
c) LFT	4/4 (100%)	2 (100%)	2(66.66%)	nil
d)Skin Biopsy(n)	1	1	2	nil

Hospitalization	3 (75%)	1 (50%)	3 (100%)	nil

Infections and infestations:

91 patients (44.82%) had skin lesions secondary to infections and infestations. The most common among them was suspected viral infections (n=61), followed by bacterial (n=26) and parasitic infestations (n=4)

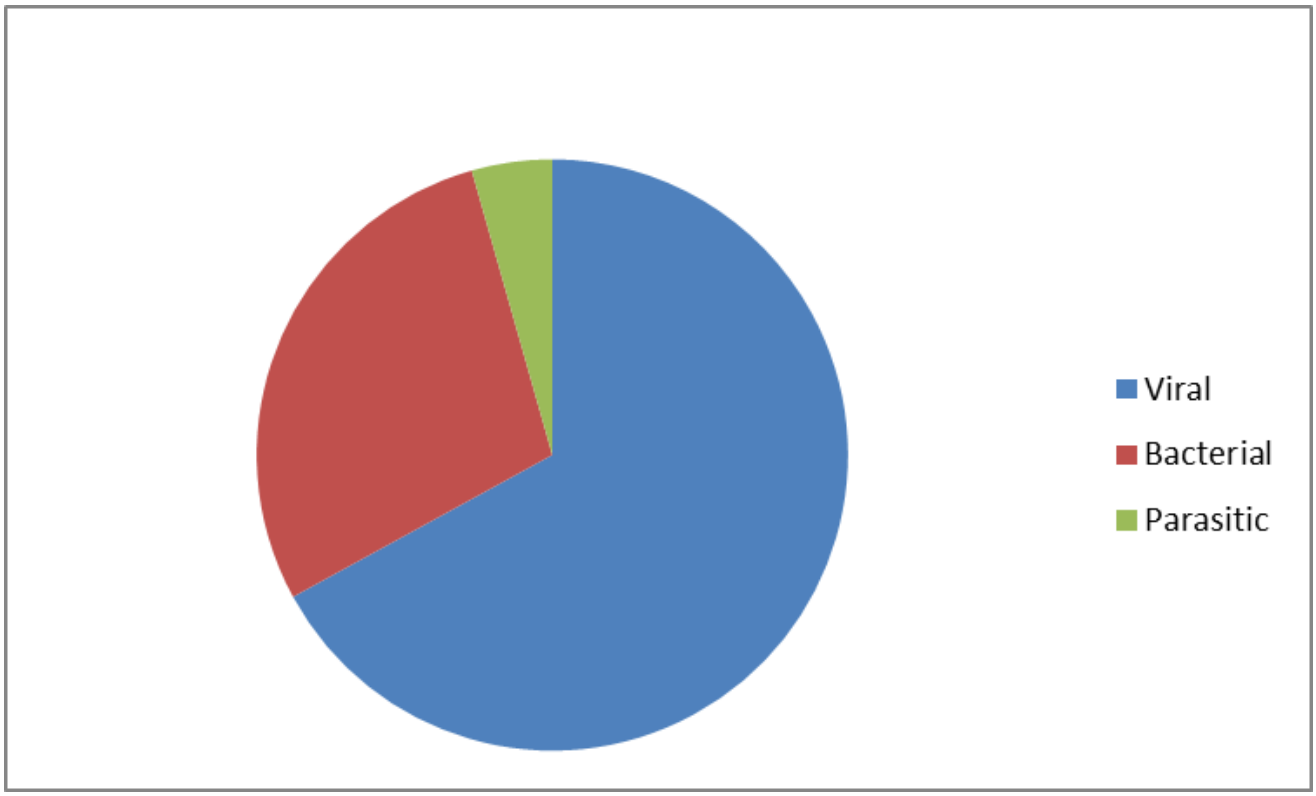


Figure 7: Categorization of infections and infestations

i) Viral infections:

61/91 (67.03%) patients (38 males, 23 females) had viral infections. The most frequent among viral infections was hand foot mouth disease seen in 17/60 (28.33%) patients, varicella in 8/60 (13.33%) patients, dengue in 4/60 (6.66%) patients, Gianotti-Crosti syndrome in 3/60 (5%), measles in 2/60 (3.33%) and 1 patient each had molluscum contagiosum and orofacial herpes. 7 patients (11.47%) required hospitalization with mean duration stay of 6.6days (range 3-16 days). 25 patients presented with fever and a self-resolving maculopapular exanthem hence was thought to be secondary to a viral infection. All admitted patients (7/7) had fever as compared to those who were not admitted (19/54) (P=0.004).

Table 6: Comparative clinical and laboratory profile of patients with viral infections - admitted vs not admitted

Parameters	**Admitted (n=7)**	**Not admitted (n=54)**
Mean age Range	3.89 years 3 months-13 years	3.25 years 2 months-15 years
Sex(M/F)	4/3	34/20
Systemic signs and symptoms:		

a) Fever	7/7 (100%)	19/54 (35.18%)
b) Respiratory	3/7 (42.85%)	8/54 (14.81%)
c) Joint pain	1/7 (14.28%)	3/54 (5.55%)
d) Gastrointestinal	nil	5 /54 (7.81%)
Relevant abnormal laboratory investigations		
a) Total WBC	2 /7(28.57%)	18/29 (62.06%)
b) Differential count	4 /7 (57.14%)	17/29 (58.62%)
c) LFT	4/7 (57.14%)	6/21 (28.57%)
d) CRP	3/7 (42.85%)	4 /8 (50%)
e)Viral serology positivity	Dengue (n=3) Measles (n=2)	Dengue (n=1)
f) Tzanck (multinucleated giant cells) positivity	nil	8

iii) Bacterial infections:

26/91(28.57%) patients (M 17, F 9) had bacterial infections of whom 19/26 had cutaneous bacterial infections and 7/26 had systemic bacterial infections with secondary cutaneous manifestations. 10/26 (38.46%) patients had impetigo, 8/26

(30.76%) patients had staphylococcal scalded skin syndrome (SSSS) and 1 patient had cellulitis. Among the patients with systemic bacterial infections, 5 patients had rickettsial infections, two patients had purpura fulminans and one child was diagnosed to have staphylococcal scarlatina secondary to MRSA induced omphalitis and septicaemia. Of the 2 patients with purpura fulminans one had meningococcemia while the other had rickettsial infection. 11 (42.30%) patients required hospitalization with mean duration of stay 4.6 days (range 3- 9 days). Fever was more prevalent in those admitted (P=0.011). Although elevated CRP was seen more frequently in those admitted it was not statistically significant (P=0.07)

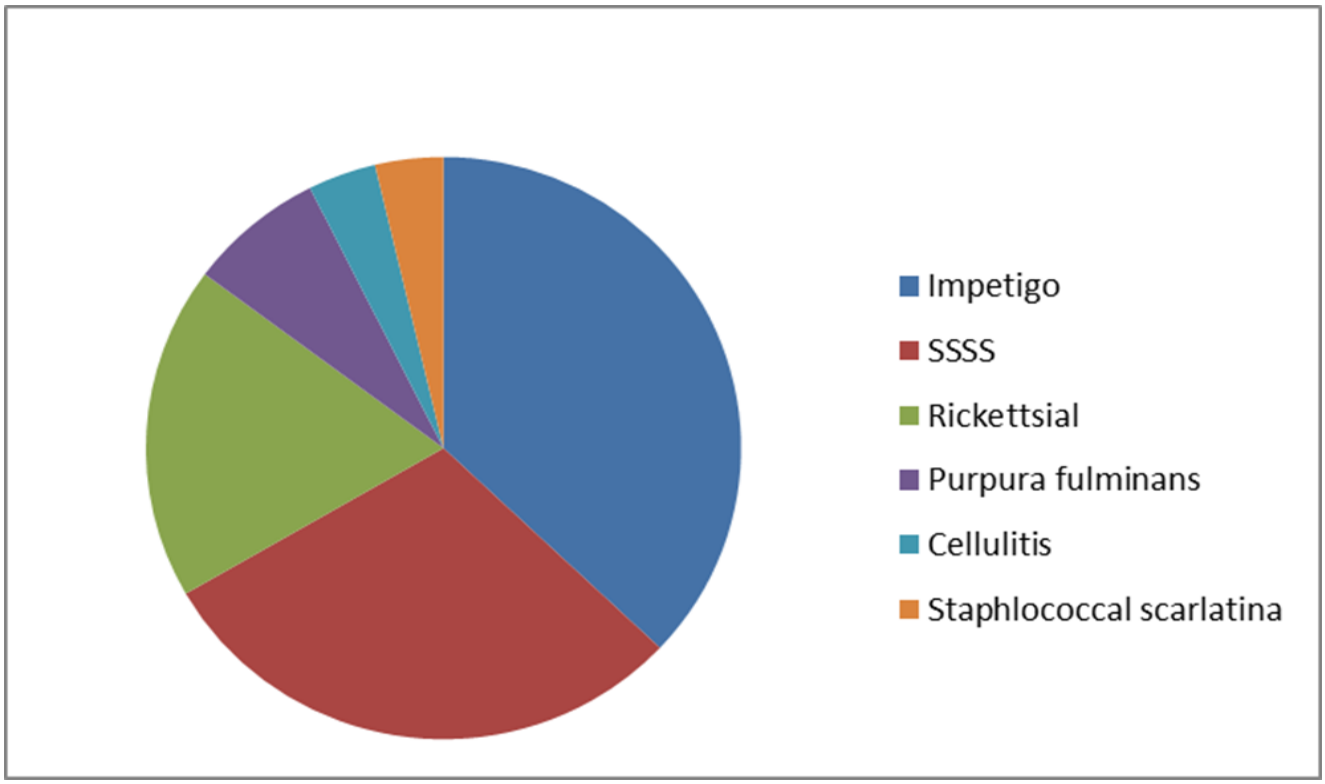


Figure 8: Types of bacterial infection

The clinical and laboratory profile of patients with bacterial infections is summarized in table 7.

Table 7: Comparative clinical and laboratory profile of patients with bacterial infections –admitted vs. not admitted

Parameters	**Admitted (n=11)**	**Not admitted(n=15)**
Mean age Range	4.3 years 2-12 years	3.2 years 6 months-12 years
Sex(M/F)	7/4	10/5
Systemic signs and symptoms a)Fever b)Respiratory c)Gastrointestinal d)Joint	 10/11(90.90%) 2 /11 (18.18%) 1/11 (9.09%) 2/11 (18.18)	 5 (33.33%) nil nil nil
Relevant abnormal laboratory investigations a) Total WBC	 6/11 (54.54%)	 1/3

b) Differential count	6/11 (54.54%)	nil
c) CRP	5/11 (45.45%)	1/14 (7.14%)
d) Culture positivity		
Blood	1/8 (12.5%)	0/2
Pus	5/7 (71.42%)	6/10 (60%)
e) Rickettsial serology positivity	n=2	n=3

c) Parasitic infestations- 4/91(4.39%) patients had scabies infestation of whom one had associated secondary bacterial infection.

Connective tissue diseases:

2 patients (females-2) with mean age of 12.5 years were diagnosed as having systemic lupus erythematosus based on SLICC criteria**.** One patient with SIRS required hospitalization and improved symptomatically at discharge.

Immunobullous disorders:

A female patient aged 12 years was diagnosed to have paraneoplastic pemphigus. This patient required hospitalization for a week and the underlying comorbidity associated was Castleman's disease. This child improved symptomatically with treatment and was discharged.

Miscellaneous :

3 patients were diagnosed to have irritant contact dermatitis, 2 patients had milaria, 1 patient each had ichthyosis vulgaris and ecchymotic lesions secondary to cortical venous thrombosis.

Mortality:

2/203 (0.9%) patients died during their course of illness in hospital . The diagnosis included one with purpura fulminans secondary to meningococcemia who died within 3 days of admission and another with febrile exanthem of probable viral etiology who died after 16 days.

DISCUSSION

Skin diseases are commonly encountered in children presenting to PED and many diseases like angioedema, erythroderma, SSSS and TEN can be life threatening and require appropriate diagnosis and management. There are only few published studies that have evaluated for the prevalence and spectrum of skin lesions in patients presenting to PED and determined the impact of skin lesions on clinical outcome. Our study is unique in that we evaluated the associated systemic involvement, abnormal laboratory parameters and clinical outcomes of admitted patients whereas the other studies (1–5) have focussed only on the cutaneous features.

The main features of our study are compared with other studies from India in table 8.

Table 8: Comparative data of current study vs Indian studies

Parameter	**Current study**	**Mathias et al (3)**	**Sarkar et al (4)**

Predominant age group	1-5 years	1-5 years	≥ 5 years
Period of study	1 year	18 months	1 year
Type of study	Cross sectional	Cross sectional	Cross sectional
Age criteria for inclusion	≤ 16 years	< 18 years	Not available
Number of patients screened	24324	Not available	Not available
Number of patients with skin lesions	203	90	103
Most common category of disorders	Inflammatory disorders	Infections	Infections

Majority (61.08%) of children in our study were in the preschool age group (≤5) similar to other published studies from India and the West (1–4). The overall gender distribution in our study showed a male predominance (M: F ratio

1.60:1). The published data from India (3,4) and Switzerland (1) also reported a male predominance among patients with skin lesions presenting to PED but in the study from France (2), females were predominant.

The main features of our study are compared with published world literature (1,2,5) as shown in table 9.

Table 9: Comparative data of current study vs world literature

Parameter	**Current study**	**Kramkimel et al** (2)	**Landolt et al** (1)	**Alkhater et al** (5)	**Moon et al** (10)
Type of study	Cross sectional	Retrospective	Retrospective	Retrospective	Retrospective
Period	1 year	1 year	1 year	1 year	3 years
Age criteria for inclusion	≤ 16 years	< 18 years	Not available	≤13 years	<18 years
Number of patients screened	24324	20652	9041	44162	Not available
Mean age of those with skin lesions	4.88 years	4.1 years	4.4 years	7±2.3 years	Not available

Number with skin lesions, n (%)	203 (0.83%)	1897 (9.2%)	1572 (17.4%)	2070 (4.7%)	347
Number with inflammatory disorders, n (%)	102(50.24%)	464(26.2%)	674(42.9%)	Not available	26 (15.6%)
Hospitalization	45 (22.16%)	155 (5.7%)	81 (5.2%)	2%	Not available

The prevalence of patients with skin lesions was lower than that reported by other studies (table 8). In the study by Kramkimel et al (2) from France, reported in 2006, among the 20652 children who presented to the PED, 1897 patients (9.2%) had cutaneous manifestations. In a later study from Switzerland over a period of 1 year, of the 9041patients evaluated, 1572 patients (17.4%) had skin related ailments (1). In a more recent retrospective study from Saudi Arabia in 2014 where a total of 44,162 PED visits were recorded among children aged ⩽13 years, of which 2070 (4.7%) involved dermatological complaints (5).The low prevalence of skin lesions in our study could be due to several reasons. In the studies done by Kramkimel et al, (2) and Landolt et al (1), they included patients with skin lesions secondary to trauma and burns which increased the prevalence of skin lesions. In the published data (1,2,5), the studies were retrospective in nature and the medical records of all consecutive patients who had visited the emergency room over a particular

period were analysed and those with either a dermatological complaint or a final diagnosis of a dermatological condition was included. The children presenting to PED in our study were first screened by the medical officer in the PED for presence of skin lesions who was not primarily a dermatologist. This could have resulted in a referral bias and the probability of minor dermatological problems going unnoticed and unrecorded was likely. The proportion of patients requiring hospitalization in our study was higher than that of other studies (1,2,5).This reflects the severity of dermatological diseases presenting to the PED. This shows the importance of early consultations and diagnosis by dermatologists and institution of appropriate treatment especially in cases like TEN and SSSS. The most common cause of hospitalization in our study was infections.

Inflammatory disorders were the commonest dermatological cause for patients attending emergency department in our study. Though this was consistent with study by Landolt et al from Switzerland(1), however the other published studies from India and France (2) reported infections as the major cause. Urticaria was the most common inflammatory condition in our study. The prevalence of urticaria was higher (22.16%) than other studies where they reported a prevalence ranging from 5%-15.9% (3,4). In accordance with previous studies (1,14) the most common etiology noted for urticaria was infection in our study. Among infections, urinary tract infection was the most common while, other studies have reported upper respiratory and gut related infections as the common trigger (14). Of the 5/45 patients with urticaria admitted, 3 had SIRS, 1 had associated colitis and another had acute tonsillitis with gut infection. The association of SIRS with urticaria in children has not

been published in literature. In our study, 11% of our patients and in a study by Kramkhimel et al(2), 17.1% of patients with urticaria required hospitalization. Among laboratory investigations in hospitalized patients it was noted that the white cell count was significantly elevated probably indicating underlying infection.

The reported prevalence of cutaneous drug reactions in patients presenting to the PED in an Indian study was 13.33% (3) while in our study it was only 6.4%. In our study, patients presenting to the PED with drug reactions usually had more severe forms like TEN, DRESS, acute generalised exanthematous pustulosis and anaphylaxis. The prevalence of TEN was higher in the study by Mathias et al (3) (10% vs 1.9%) than in our study. Although the reported mortality in children admitted with TEN is 2% (17), all 3 of our patients recovered. Herpes simplex virus has been reported to be the cause of TEN in 9% of patients where as in our study 1/3 patients with TEN had culture proven HSV infection. This indicates the importance of identifying and treating HSV infections in patients with TEN to improve the outcome. Lamotrigine is reported to be the one of the commonest causative agents in children with TEN in Western population (49) and was seen in one of our patients with TEN. However, in patients with DRESS we found that carbamazepine, phenytoin and levetiracetam were the common etiological agents. A study from United States also showed anticonvulsants as the etiology in 11% of children with drug hypersensitivity syndrome. Though a mortality rate of 5-10% is reported in DRESS (54), there were none reported in our study. Anaphylaxis is not uncommon in children. In one study (55), 9.9% of children were recorded to have anaphylaxis. The prevalence of anaphylaxis in our study was 0.49% indicating a lower prevalence. In the same study

(55), 0.3% had anaphylaxis to cefazolin which was the trigger in our patient. One needs to be vigilant for this complication when administering drugs to children as fatality is high if not recognised and treated immediately.

The triggers for AGEP includes infections, drugs and vaccines as reported in the study by Ersoy et al (56). AGEP has not been reported in published literature of PED cases (4,8,9).We had 2 cases of probable drug induced acute generalised exanthematous pustulosis to mefenamic acid and albendazole respectively. It is important for paediatricians and dermatologists to be aware of this entity and be able to distinguish it from other causes of generalized pustular eruptions in children like generalized pustular psoriasis, folliculitis and pustular bacterid, as their management differs. The most commonly observed systemic complication in our patients with drug reactions were altered liver function tests similar to published data (57).

The reported prevalence of cutaneous vasculitis among children attending emergency department varies from 0 to 8.9% (1–3), HSP accounting for 2% of cases. We found a similar prevalence of HSP in our study. Among our patients with HSP and in published data (3,58), gastrointestinal symptoms were the most frequently associated systemic complaint. Patients in our study required admission due to associated systemic complaints like fever, abdominal pain, arthralgia and urinary tract infection. There was no mortality in our hospitalized patients though a mortality rate of 1-3% is reported in children with HSP having gastrointestinal tract involvement (59).

Studies from India and West have shown high prevalence of cutaneous infections presenting to the paediatric emergency department (10). Similar to our observation, most Western studies (3,4,10) report viral infections as being the most commonest cause for attendance, however, an Indian study (9) reported bacterial infections to be the most common cause. The pattern of viral infections seen

in our study reflects the pattern seen in India and this included HFMD which was the most common viral infection seen and dengue both of which were not reported in Western literature (2). The increased prevalence of viral infections in summer was in concordance with other study (2). Varicella was the commonest exanthem reported in other studies(1,2). In addition, non specific febrile exanthem are reported in a high proportion of patients presenting to PED and most of them were self -resolving. However, one child with febrile exanthem, in whom all viral etiologies including parvovirus, enterovirus, dengue, measles and scrub typhus were ruled out died after 16 days of hospitalization.

Impetigo was the most common bacterial infection noted in our study similar to other published data (2,9) followed by SSSS. A hospital based study from India (60) showed that the prevalence of MRSA in children was 16.66%. Two patients, one with SSSS and another with staphylococcal scarlatina had MRSA infection. A case report from Brazil showed a fatal outcome in a child with MRSA induced SSSS and hence it is important to recognize and treat the condition with the appropriate antibiotic in order to avoid mortality (61)**.** Five patients in our study had rickettsial infection of whom 2 had SIRS. The common presentation in our study was fever with maculopapular exanthem, however one child presented with purpura

fulminans. A community based study from south India the reported prevalence of rickettsial infection in children was 13.8% (62). Hence it is essential to consider rickettsial infections as a possibility in children presenting with fever and maculopapular exanthem or purpura fulminans. Patients with purpura fulminas accounted for 0.9% in our study as opposed to 12.2% in another study from India (3). As stated above, 1 patient had serology proved rickettsiae and in another child the blood culture N.meningitidis. While in the Indian study, 3 were secondary to suspected rickettsial infection and in the remaining the etiology could not be determined. In a study by Powars et al (63), the prevalence of meningoccci induced purpura fulminans was 24.77% of whom 50% died. A high mortality and morbidity was reported in children with meningococcus induced purpura fulminans and even in our study child with meningococcemia died.

The incidence of Kawasaki's disease among children were reported to be 60-150 per 100,000 children below 5 years of age have been reported from several countries (64). In our study 2 children were diagnosed to have Kawasaki's disease. Both the children had associated SIRS requiring hospitalization and they improved clinically at discharge. Kramkimel et al, reported 5 /1897 cases with Kawasaki's disease, with all of them requiring hospitalization.

One child with paraneoplastic pemphigus presented to the emergency department with fever and intractable oral ulceration. The diagnosis was established with biopsy, direct immunofluorescence and serology and she was subsequently detected to have underlying Castleman's disease which is a well-recognized association (65). This rare diagnosis needs to be kept in mind in children

presenting with intractable oral ulceration with systemic symptoms. The other common differentials of oral ulceration like herpetic gingivostomatitis and SJS needs to be ruled out in such situations.

The number of patients who required hospitalization in our study were 45 (22.16%) which was relatively higher than other studies where it ranged from 4.2 % to 8.2% (1,2). Among the hospitalized patients in our study and in other studies (1,2), the most common etiology was secondary to infections. Viral infections and SSSS constituted the major categories in our study whereas in other studies it was secondary to cellulitis/erysipelas (1) and cutaneous abscesses (30). In our study it was seen that hospitalization was significantly higher among older children (>6 years) (P=0.013), those with infections and fever (P=0.011), and elevated WBC counts in those with urticaria.

The most common skin diseases causing SIRS as reported in literature were adverse drug reactions and infections (66). Among the hospitalized patients in our study, 25 (55.55%) satisfied the criteria for SIRS, the most common underlying condition in them being infections (48%) followed by vasculitis (20%).In the study by Thomas et al(66), cutaneous vasculitis(3%) was found to be associated with SIRS. As patients with infections and associated SIRS are at risk of sepsis as has been reported in literature (53) it is important to recognize and treat the infection at the earliest. Two (8%) among them died during their course in the hospital of whom one had purpura fulminans and another had febrile exanthem of unknown etiology. The presence of SIRS did not influence the duration of hospitalization. The

association of SIRS in children with paediatric dermatological conditions has not been reported in literature and our study was the first to report the above association.

Thus the wide spectrum of cutaneous manifestations seen in the paediatric emergency department with high hospitalization rate highlights that patients come with more severe skin ailments. This emphasizes the role of dermatologists in the management of paediatric emergencies and the need for including dermatological training for doctors working in emergency departments.

CONCLUSIONS

- In this cross-sectional study conducted over a period of one year the prevalence of dermatological disorders of 0.83% among paediatric emergency department attendees was lower than that published in literature.
- The most common category of diseases seen were inflammatory (n=102) and infections (n=91). However, among the preschool age group (1-5 years) infections were the most common.
- In the inflammatory category, the disorders noted were urticaria (n=45), vasculitis (n=9), erythema multiforme (n=5), DRESS syndrome (n=4), toxic epidermal necrolysis (n=2) and acute generalized exanthematous pustulosis (n=2).
- In the infectious category, the majority were viral (n=61) followed by bacterial infections (n=26).
- The prevalence of viral infections was significantly higher during summer months.
- The rate of hospitalization was higher than that reported in other studies.
- Infections presenting with fever were the most common cause for hospitalization.

- The mean age was significantly higher among hospitalized patients in our study compared to the non-hospitalized patients.
- Among the hospitalized patients, 55.55% had SIRS, however this did not influence the duration of hospitalization.
- The outcome of hospitalized patients was good. The mortality was < 1%.

LIMITATIONS

1) The patients were first examined for presence of skin lesions by emergency medical officer who is not a dermatologist. Hence chances of minor dermatological problems going unnoticed were high.

2) The study was conducted in a single centre and done over a limited period of time (12 months).

RECOMMENDATIONS

1) Early referral of patients to the dermatologists with primary skin conditions presenting to PED may result in better outcomes and management.
2) Careful examination of the skin may help to establish a diagnosis especially in patients with multisystem diseases like vasculitis, rickettsial infections and collagen vascular diseases.
3) Training of residents in PED about common skin conditions could result in early diagnosis and better management for the patients.
4) The paediatrician and dermatologist must work hand in hand to manage paediatric dermatological emergencies as early institution of treatment and observation may be lifesaving.

SUMMARY

Background:

There is limited information on the prevalence, spectrum and clinical outcomes of dermatological conditions presenting to paediatric emergency department.

Objective:

To study the clinical profile of skin manifestations in children < 16 years presenting to the paediatric emergency department over a period of 1year and to assess the impact of skin lesions on the clinical outcome.

Methods:

A cross sectional study was conducted over a period of one year (Aug 2015-July 2016). All patients presenting to the PED were screened for the presence or absence of skin lesions. Those with skin lesions were referred to dermatology unit (24 hour on call mobile was provided) for evaluation. The patients with skin lesions were included and categorized into 7 subsets based on their diagnosis. Outcomes evaluated were duration of hospital stay, associated SIRS and mortality. The study was approved by the Institutional Review Board (IRB) and consent was obtained from patient or their

parents prior to enrolment. Frequencies and percentages were used to measure the prevalence of skin lesions. Spectrum of skin conditions were presented with same descriptive statistics. Time series analysis of total monthly visits and monthly viral infections were performed using sequence chart and the difference between the first season and second season were analysed using segmented regression analysis and significance calculated. The association between the outcome and other categorical variables were assessed using a chi-square test and Mann-Whitney U test. The data entry was done using Epidata 3.1 software and data analysis by using Microsoft Excel and SPSS 16.0 software.

Results:

Of the 24324 patients screened during the study period, 203 patients (0.83%) had skin lesions. The mean age was 4.88 ± 4.04 years. There was a male preponderance with a male: female ratio of 1.6:1. The majority of patients (43.84%) were in the age group of 1 to 5 years and in this group. The most frequent skin lesions noted in our study were secondary to inflammatory disorders (n=102, 50.24%) that included urticaria (n=45), Henoch Schonlein purpura (n=6), erythema multiforme (n=5), DRESS syndrome (n=4), toxic epidermal necrolysis (n=3), acute generalized exanthematous pustulosis (n=2) and Kawasaki's disease (n=2) followed by infections(n=91,44.82%) like HFMD (n=17), varicella (n=8), staphylococcal scalded skin syndrome (n=8) and rickettsiae (n=5).There were also two cases each of purpura fulminans and systemic lupus erythematosus . The prevalence of viral infections was found to be significantly

higher during summer months. 22.16% of patients were hospitalized in our study with most common among them being staphylococcal scalded skin syndrome (n=7), viral exanthem (n=7) and Henoch Schonlein purpura (n=6).We noted that the mean age was higher among hospitalized patients compared to the non-hospitalized patients. Among the hospitalized patients 25 had SIRS. These patients has associated infections (n=14,56%), vasculitis (n=5,20%) and urticaria (n=3,12%). Of them two died, one secondary to purpura fulminans and another had febrile exanthem of probable viral etiology.

Conclusions:

- In this hospital based cross sectional study it was seen that the prevalence of dermatological disorders among paediatric emergency department attendees was 0.83% which was lower than that published in literature.
- The two main group of diseases were viral exanthema and urticaria.
- 22.16% were hospitalized which was higher than that reported in other studies.
- Among the hospitalized patients,25 (55.55%) had SIRS however this did not influence the outcome.
- The outcome of hospitalized patients was good under the mortality of < 1%.

Bibilography:

1. Landolt B, Staubli G, Lips U, Weibel L. Skin disorders encountered in a Swiss pediatric emergency department. Swiss Med Wkly. 2013;143:w13731.

2. Kramkimel N, Soussan V, Beauchet A, Duhamel A, Saiag P, Chevallier B, et al. High frequency, diversity and severity of skin diseases in a paediatric emergency department. J Eur Acad Dermatol Venereol. 2010 Dec 1;24(12):1468–75.

3. Mathias RC, Jayaseelan E, Augustine M. Spectrum of pediatric dermatological emergencies at a tertiary care hospital in India: a descriptive study. Int J Dermatol. 2013 Jan;52(1):27–31.

4. Sarkar R, Basu S, Patwari AK, Sharma RC, Dutta AK, Sardana K. An appraisal of pediatric dermatological emergencies. Indian Pediatr. 2000 Apr;37(4):425–9.

5. AlKhater SA, Dibo R, Al-Awam B. Prevalence and pattern of dermatological disorders in the pediatric emergency service. J Dermatol Dermatol Surg [Internet]. [cited 2016 Sep 6]; Available from: http://www.sciencedirect.com/science/article/pii/S2352241016300068

6. Gupta S, Sandhu K, Kumar B. Evaluation of emergency dermatological consultations in a tertiary care centre in North India. J Eur Acad Dermatol Venereol. 2003;17(3):303–305.

7. Krauss BS, Harakal T, Fleisher GR. The spectrum and frequency of illness presenting to a pediatric emergency department. Pediatr Emerg Care. 1991 Apr;7(2):67–71.

8. Shivaram V, Christoph RA, Hayden GF. Skin disorders encountered in a pediatric emergency department. Pediatr Emerg Care. 1993 Aug;9(4):202–4.

9. Auvin S, Imiela A, Catteau B, Hue V, Martinot A. Paediatric skin disorders encountered in an emergency hospital facility: a prospective study. Acta Derm Venereol. 2004;84(6):451–4.

10. Moon AT, Castelo-Soccio L, Yan AC. Emergency department utilization of pediatric dermatology (PD) consultations. J Am Acad Dermatol. 2016 Jun 1;74(6):1173–7.

11. Machura E, Jońska-Golus M, Krakowczyk H, Kasperska-Zając A, Ziora K. [Etiology and clinical course of urticaria in hospitalized children]. Med Wieku Rozwoj. 2013 Mar;17(1):64–71.

12. Caubet J-C, Kaiser L, Lemaître B, Fellay B, Gervaix A, Eigenmann PA. The role of penicillin in benign skin rashes in childhood: a prospective study based on drug rechallenge. J Allergy Clin Immunol. 2011 Jan;127(1):218–22.

13. Shah UK, Jacobs IN. Pediatric angioedema: Ten years' experience. Arch Otolaryngol Neck Surg. 1999 Jul 1;125(7):791–5.

14. Liu T-H, Lin Y-R, Yang K-C, Chou C-C, Chang Y-J, Wu H-P. First attack of acute urticaria in pediatric emergency department. Pediatr Neonatol. 2008 Jun;49(3):58–64.

15. Keller N, Gilad O, Marom D, Marcus N, Garty BZ. Nonbullous Erythema Multiforme in Hospitalized Children: A 10-Year Survey. Pediatr Dermatol. 2015 Oct;32(5):701–3.

16. Alerhand S, Cassella C, Koyfman A. Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in the Pediatric Population: A Review. Pediatr Emerg Care. 2016 Jul;32(7):472–6.

17. Forman R, Koren G, Shear NH. Erythema multiforme, Stevens-Johnson syndrome and toxic epidermal necrolysis in children: a review of 10 years' experience. Drug Saf. 2002;25(13):965–72.

18. Ferrandiz-Pulido C, Garcia-Patos V. A review of causes of Stevens–Johnson syndrome and toxic epidermal necrolysis in children. Arch Dis Child. 2013 Dec 1;98(12):998–1003.

19. Finkelstein Y, Soon GS, Acuna P, George M, Pope E, Ito S, et al. Recurrence and Outcomes of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Children. Pediatrics. 2011 Oct 1;128(4):723–8.

20. Bastuji-Garin S, Fouchard N, Bertocchi M, Roujeau JC, Revuz J, Wolkenstein P. SCORTEN: a severity-of-illness score for toxic epidermal necrolysis. J Invest Dermatol. 2000 Aug;115(2):149–53.

21. Sheridan RL, Schulz JT, Ryan CM, Schnitzer JJ, Lawlor D, Driscoll DN, et al. Long-term consequences of toxic epidermal necrolysis in children. Pediatrics. 2002 Jan;109(1):74–8.

22. Hamilton GM, Fish J. Pediatric toxic epidermal necrolysis: an institutional review of patients admitted to an intensive care unit. J Burn Care Res Off Publ Am Burn Assoc. 2013 Dec;34(6):e351-358.

23. Thappa D, Kumari R, Timshina D. Drug hypersensitivity syndrome. Indian J Dermatol Venereol Leprol. 2011;77(1):7.

24. Bessmertny O, Hatton RC, Gonzalez-Peralta RP. Antiepileptic hypersensitivity syndrome in children. Ann Pharmacother. 2001 May;35(5):533–8.

25. Newell BD, Moinfar M, Mancini AJ, Nopper AJ. Retrospective analysis of 32 pediatric patients with anticonvulsant hypersensitivity syndrome (ACHSS). Pediatr Dermatol. 2009 Oct;26(5):536–46.

26. Meadows KP, Egan CA, Vanderhooft S. Acute Generalized Exanthematous Pustulosis (AGEP), an Uncommon Condition in Children: Case Report and Review of the Literature. Pediatr Dermatol. 2000 Sep 1;17(5):399–402.

27. Nacaroglu HT, Celegen M, Ozek G, Umac O, Karkıner CSU, Yıldırım HT, et al. Acute generalized exanthematous pustulosis induced by ceftriaxone use. Adv Dermatol Allergol Dermatol Alergol. 2014 Aug;31(4):269–71.

28. Berk DR, Bayliss SJ. MRSA, staphylococcal scalded skin syndrome, and other cutaneous bacterial emergencies. Pediatr Ann. 2010 Oct;39(10):627–33.

29. Patel GK, Finlay AY. Staphylococcal scalded skin syndrome: diagnosis and management. Am J Clin Dermatol. 2003;4(3):165–75.

30. Lamand V, Dauwalder O, Tristan A, Casalegno JS, Meugnier H, Bes M, et al. Epidemiological data of staphylococcal scalded skin syndrome in France from 1997 to 2007 and microbiological characteristics of Staphylococcus aureus associated strains. Clin Microbiol Infect Off Publ Eur Soc Clin Microbiol Infect Dis. 2012 Dec;18(12):E514-521.

31. Lipový B, Brychta P, Chaloupková Z, Suchánek I. Staphylococcal scalded skin syndrome in the Czech Republic: an epidemiological study. Burns J Int Soc Burn Inj. 2012 Mar;38(2):296–300.

32. Avabratha K, Rai B, Sethuraman K, Varghese A. Staphylococcal scalded skin syndrome: A dermatological emergency in pediatrician′s hand. Med J Dr Patil Univ. 2014;7(2):189.

33. Rathi N, Rathi A. Rickettsial infections: Indian perspective. Indian Pediatr. 2010 Feb;47(2):157–64.

34. Kumar Bhat N, Dhar M, Mittal G, Shirazi N, Rawat A, Prakash Kalra B, et al. Scrub Typhus in Children at a Tertiary Hospital in North India: Clinical Profile and Complications. Iran J Pediatr. 2014 Aug;24(4):387–92.

35. Sarkar R, Garg V, Mishra K. Fever with rash in a child in India. Indian J Dermatol Venereol Leprol. 2012;78(3):251.

36. Salavastru C, Stanciu A, Tiplica G, Fritz K. A burst in the incidence of viral exanthems. Indian Dermatol Online J. 2014;5(2):144.

37. McGraw-Hill Medical: Fitzpatrick's Dermatology - References [Internet]. [cited 2016 Sep 6]. Available from: http://www.fitzpatricksdermatology.com/references.php

38. DUBOS F, GRANDBASTIEN B, HUE V, MARTINOT A. Epidemiology of hospital admissions for paediatric varicella infections: a one-year prospective survey in the pre-vaccine era. Epidemiol Infect. 2007 Jan;135(1):131–8.

39. Wong SSY, Yip CCY, Lau SKP, Yuen KY. Human enterovirus 71 and hand, foot and mouth disease. Epidemiol Infect. 2010 Aug;138(8):1071–89.

40. Chong CY, Chan KP, Shah VA, Ng WYM, Lau G, Teo TES, et al. Hand, foot and mouth disease in Singapore: a comparison of fatal and non-fatal cases. Acta Paediatr Oslo Nor 1992. 2003 Oct;92(10):1163–9.

41. Thomas EA, John M, Kanish B. MUCOCUTANEOUS MANIFESTATIONS OF DENGUE FEVER. Indian J Dermatol. 2010;55(1):79–85.

42. Singh-Grewal D, Durkan AM. Pediatric Vasculitis. Indian J Pediatr. 2015 Sep 14;83(2):156–62.

43. Dolezalová P, Telekesová P, Nemcová D, Hoza J. Incidence of vasculitis in children in the Czech Republic: 2-year prospective epidemiology survey. J Rheumatol. 2004 Nov;31(11):2295–9.

44. Trapani S, Micheli A, Grisolia F, Resti M, Chiappini E, Falcini F, et al. Henoch Schonlein purpura in childhood: epidemiological and clinical analysis of 150 cases over a 5-year period and review of literature. Semin Arthritis Rheum. 2005 Dec;35(3):143–53.

45. Bukhari EM, Al-Sofyani KA, Muzaffer MA. Spectrum of Henoch-Schonlein Purpura in Children: A Single-Center Experience from Western Provence of Saudi Arabia. Open J Rheumatol Autoimmune Dis. 2015;5(1):17–22.

46. Singh S, Bansal A, Gupta A, Kumar RM, Mittal BR. Kawasaki disease: a decade of experience from North India. Int Heart J. 2005 Jul;46(4):679–89.

47. Ducos MH, Taïeb A, Sarlangue J, Perel Y, Pedespan JM, Hehunstre JP, et al. [Cutaneous manifestations of Kawasaki disease. Apropos of 30 cases]. Ann Dermatol Vénéréologie. 1993;120(9):589–97.

48. Gürgey A, Aytac S, Kanra G, Secmeer G, Ceyhan M, Altay C. Outcome in children with purpura fulminans: report on 16 patients. Am J Hematol. 2005 Sep;80(1):20–5.

49. Davis MDP, Dy KM, Nelson S. Presentation and outcome of purpura fulminans associated with peripheral gangrene in 12 patients at Mayo Clinic. J Am Acad Dermatol. 2007 Dec;57(6):944–56.

50. Levy DM, Kamphuis S. Systemic Lupus Erythematosus in Children and Adolescents. Pediatr Clin North Am. 2012 Apr;59(2):345–64.

51. Initial presentation of childhood-onset systemic lupus erythematosus: a French multicenter study. - PubMed - NCBI [Internet]. [cited 2016 Jul 27]. Available from: http://www.ncbi.nlm.nih.gov/pubmed/15870669

52. Mina R, Brunner HI. Pediatric Lupus – Are There Differences in Presentation, Genetics, Response to Therapy, Damage Accrual Compared to Adult Lupus? Rheum Dis Clin North Am. 2010 Feb;36(1):53–80.

53. Pavare J, Grope I, Gardovska D. Prevalence of systemic inflammatory response syndrome (SIRS) in hospitalized children: a point prevalence study. BMC Pediatr. 2009;9:25.

54. Alexander T, Ba EI, Park Y, Duncan D, Peden D, Sheikh S, et al. Severe DRESS Syndrome Managed With Therapeutic Plasma Exchange. Pediatrics. 2013 Mar 1;131(3):e945–9.

55. Renaudin J-M, Beaudouin E, Ponvert C, Demoly P, Moneret-Vautrin D-A. Severe drug-induced anaphylaxis: analysis of 333 cases recorded by the Allergy Vigilance Network from 2002 to 2010. Allergy. 2013 Jul;68(7):929–37.

56. Ersoy S, Paller AS, Mancini AJ. ACute generalized exanthematous pustulosis in children. Arch Dermatol. 2004 Sep 1;140(9):1172–3.

57. Patel T, Thakkar S, Sharma D. Cutaneous adverse drug reactions in Indian population: A systematic review. Indian Dermatol Online J. 2014;5(6):76.

58. Hung S-P, Yang Y-H, Lin Y-T, Wang L-C, Lee J-H, Chiang B-L. Clinical manifestations and outcomes of Henoch-Schönlein purpura: comparison between adults and children. Pediatr Neonatol. 2009 Aug;50(4):162–8.

59. Akbar DH. Fatal complication of henoch - schonlein purpura: Case report and literature review. Saudi J Gastroenterol. 2000 Sep 1;6(3):165.

60. Risk Factors Associated with Methicillin-resistant Staphylococcus aureus Infection in Children [Internet]. [cited 2016 Sep 18]. Available from: http://indianpediatrics.net/jan2015/jan-31-33.htm

61. Hörner A, Hörner R, Salla A, Nunes MS, Garzon LR, Rampelotto RF, et al. Staphylococcal scalded skin syndrome in a premature newborn caused by methicillin-resistant Staphylococcus aureus: case report. Sao Paulo Med J. 2015 Oct;133(5):450–3.

62. Kamarasu K, Malathi M, Rajagopal V, Subramani K, Jagadeeshramasamy D, Mathai E. Serological evidence for wide distribution of spotted fevers & typhus fever in Tamil Nadu. Indian J Med Res. 2007 Aug;126(2):128–30.

63. Powars D, Larsen R, Johnson J, Hulbert T, Sun T, Patch MJ, et al. Epidemic meningococcemia and purpura fulminans with induced protein C deficiency. Clin Infect Dis Off Publ Infect Dis Soc Am. 1993 Aug;17(2):254–61.

64. Pendse RN, Bhandari H, Vats AK, Bhandari B. Kawasaki disease—Indian perspective. Indian J Pediatr. 68(8):775–7.

65. Mimouni D, Anhalt GJ, Lazarova Z, Aho S, Kazerounian S, Kouba DJ, et al. Paraneoplastic pemphigus in children and adolescents. Br J Dermatol. 2002 Oct;147(4):725–32.

66. Systemic inflammatory response syndrome in diseases of the skin. - PubMed - NCBI [Internet]. [cited 2016 Sep 26]. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20145056

ANNEXURE 1: (CRITERIAS)

REGISCAR CRITERIA FOR DRESS SYNDROME (1A)

	No	Yes	Unknown
(1) Fever > 38.5°C	−1	0	-1
(2) Enlarged lymph nodes (>2 sites, >1 cm)	0	1	0
(3) Atypical lymphocytosis	0	1	0
(4) Eosinophilia	0		0
700-1499		1	
>=1500		2	
(5) Skin rash:			
Extent > 50%	0	1	0
At least 2 of- edema, infiltration, purpura, scaling	−1	1	0
Biopsy suggestive of DRESS	−1	0	0
(6) Internal organ involvement	0		0
One		1	
2 or more		2	
(7) Resolution in >15 days	−1	0	−1
(8) At least 3 investigations negative for alternative cause	0	1	0

Final score: <2 No case; 2-3 possible case, 4-5 probable case; >5 definite case (21)

SLICC CRITERIA (1B)

Clinical Criteria:		Immunological criteria:
a.	Acute cutaneous lupus erythematosus	ANA
b.	Chronic cutaneous lupus erythematosus	Anti-DNA
c.	Non scarring alopecia	Anti-Sm
d.	Oral or nasal ulcers	Antiphospholipd AB
e.	Arthritis	Low complement
f.	Serositis	Direct Coombs test
g.	Renal	
h.	Neurologic	
i.	Haemolytic anaemia	
j.	Leucopenia	
k.	Thrombocytopenia	

Requirements-4 or more positive with one clinical and one immunological criteria

ACR criteria for Henoch Schonlein purpura (1 C):

Presence of at least two of the following:

(1) Age ≤ 20 years at disease onset

(2) Palpable purpura

(3) Acute abdominal pain

(4) Biopsy showing granulocytes in the walls of small arterioles/venules.

SIRS criteria (67): (1 D):

The presence of two or more of the following criteria (one of which must be abnormal temperature or leukocyte count) defines SIRS :

a)Core temperature (measured by rectal, bladder, oral, or central probe) of >38.5°C or <36°C

b)Tachycardia, defined as a mean heart rate more than two standard deviations above normal for age, or for children younger than one year of age, bradycardia defined as a mean heart rate <10th percentile for age

c)Mean respiratory rate more than two standard deviations above normal for age or mechanical ventilation for an acute pulmonary process

d)Leukocyte count elevated or depressed for age, or >10 percent immature neutrophils

ANNEXURE 2

PROFORMA

Name: Age: Sex: S.No.

Address:

Presenting Complaint:

Skin lesions Yes/No

Others Yes/No

Duration of symptoms (in months)

Skin lesions

Others

Site of involvement- Face/trunk/upper limb/lower limb/genitalia/scalp/palms/soles/mucosa

Systemic symptoms: Yes/No

	No	Yes	Duration
Fever			
Gastrointestinal			
Respiratory			
Joint pain			
Others			

Any H/O drug intake-

Last dose:

Examination

Type of skin lesions: Papules/macules/patch/Erythroderma/
Purpuric/nodules/bulla/ulcer

Size of involvement: Face/upper limb/lower limb/trunk/palms/
Soles/genitalia/scalp

Extent of involvement:

Genitalia

Mucosa

GS: Temperature Pallor lymph node

Systemic examination Yes No

Liver

Spleen

Investigations

1. Haemoglobin
2. TC
3. DC
4. Platelet count
5. CRP
6. ESR
7. Urine

   Uncentrifuged for WBC's

   CXR
8. Total bilirubin

   Direct bilirubin

   SGOT

   SGPT

   Albumin

   Alkaline phosphatase

   LDH
9. Serum Creatinine
10. Biopsy

ANNEXURE 3

Informed Consent form to participate in a clinical trial

Study Title:
Study of cutaneous manifestations in children presenting to paediatric emergency department

Study Number:

Subject's Initials: _____ Subject's Name: _____
Date of Birth / Age: _____
(i) I confirm that I have read and understood the information sheet dated _____ for the above study and have had the opportunity to ask questions. [ ]
(ii) I understand that my participation in the study is voluntary and that I am free to withdraw at
any time, without giving any reason, without my medical care or legal rights being affected. [ ]
(iii) I understand that the Sponsor of the clinical trial, others working on the Sponsor's behalf,
the Ethics Committee and the regulatory authorities will not need my permission to look at my
health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this access. However, I
understand that my identity will not be revealed in any information released to third parties or
published. [ ]
(iv) I agree not to restrict the use of any data or results that arise from this study provided such
a use is only for scientific purpose(s) [ ]
(v) I agree to take part in the above study. [ ]
Signature (or Thumb impression of the Subject/Legally Acceptable Representative):
Signatory's Name: _____ Date: ____/____/_____
Signature of the Investigator: _____
Date: ____/____/_____
Study Investigator's Name: _____
Signature or thumb impression of the Witness: _____
Date: ____/____/_____
Name & Address of the Witness: _____

ANNEXURE 4

Child Assent Form

Title of the study: **Study of cutaneous manifestions in children presenting to paediatric emergency department**

Protocol number: 09572

Principal investigator: Dr.Parthiban.U

Address: Department of Dermatology, Venereology and Leprosy Unit 1, Christian Medical College and Hospital (CMCH), Vellore. Phone no: 0416-2283527
Location where the study will be conducted: Paediatric Emergency Department,Christian medical college,Vellore

We want to tell you about a study we are doing.We are going to do a study on skin conditions occurring in children presenting to paediatric emergency department . This study will provide data and better understanding of common conditions producing emergency consultations .You are being asked to join the study because we feel that you are a ideal subject for the causes being studied.
The doctor will examine your skin thoroughly and take down the details in a special proforma. If felt necessary he would click photographs of the skin lesions. For a special testing, a biopsy of the skin, where we remove a small bit of skin, may be required.

Can anything bad happen to me?
We want to tell you about some things that might hurt or upset you if you are in this study. A skin biopsy may be done if required. Possible complications include
- Pain
- Bleeding at the puncture site
- Scarring

Can anything good happen to me?
In this study we are going to know the common skin conditions presenting in paediatric emergency department and to find the outcome of the disease in admitted patients which will be helpful in understanding the prognosis of the disease which affects you.

Will anyone know I am in the study?
We will not tell anyone that you took part in this study. When the study is completed, we will write a report about what we find out. We won't use your name in the report.

What happens if I get hurt?
There is a negligible risk of getting hurt and your parents/ guardians have been informed about the same .

What if I do not want to do this?
You don't have to be in this study. It is entirely your wish. If you agree now, but refuse later, that is okay too. All you need to do is to tell us.

If you want to participate in this study, please sign below –
[ ] Yes, I want to be a part of this study
[ ] No, I do not want to be a part of this study
Name of the child:
Signature/ thumb impression of the child:
Date:
Witness mediator
Name:
Signature/thumb impression:
Date:

Person obtaining Assent:
I have explained the research at a level that is understandable by the child and believe that the child understands what is expected during the study.
Name of the investigator:
Signature:
Date:
Witness mediator
Name:
Signature:
Date:

ANNEXURE 5

Patient Information Sheet

Study Title:

Skin lesions in paediatric emergency department

Purpose of research:

To study the various skin presentations in patients presenting to the paediatric emergency department and to find its effect on clinical outcome in admitted patients.

Description of procedures:

This study may involve laboratory investigations and skin biopsy but does not include any treatment measures

Risks or discomforts to the subject:

As the study does not include any trial treatment ,there is no extra risk for the patient due to participation in the study and there will not be any additional cost of treatment for the patient.

Benefits to the patient:

There may not be any benefit to the participant.

Benefits to others:

Information gathered from this study might help to know about the spectrum of skin conditions in paediatric emergency department and identify subgroup of patients who might be at a higher risk of poorer outcomes.

Confidentiality:

Patient's identity will not be revealed in any information or released to third parties or published

Participation:

Your participation in the study is entirely voluntary and the patient is free to withdraw at anytime, without giving any reason. Refusal to participate in the study will not involve any penalty or loss of benefits to which the subject is otherwise entitled.

Master chart

slno	age	sex	address	skin	duration	duration_days	systemic	fever	fd	joint	jd	gastro	gd	respir	rd	cns	cd	cvs	cvd	others	family	past	tuberculos	atopy	drug
1	1.00	2	West bengal	1	0.03	3.00	2														2	2	2	2	2
2	4.00	2	Vellore	1	0.07	7.00	1	2		2		2		1	5	2		2		2	2	2	2	2	2
3	7.00	2	Chitoor	1	6.00	180.00	2														2	2	2	2	2
4	3.00	1	Vellore	1	0.03	3.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
5	1.00	2	Vellore	1	0.05	5.00	2																		2
6	4.00	2	Arani	1	0.03	3.00	2														2	2	2	2	2
7	6.00	1	Chittoor	1	0.03	3.00	1	1	3	2		2		1	3	2		2		2	2	2	2	2	1
8	0.08	2	Ranipet	1	0.03	3.00	2																		2
9	5.00	1	Arni,tamil nadu	1	0.05	5.00	1	2		2		1	2	2		2		2		2	2	2	2	2	2
10	1.00	2	Palamneer,AP	1	0.01	1.00	1	1	4	2		1	2	2		2		2		2	2	2	2	2	1
11	10.00	1	Vellore	1	0.01	1.00	1	1	1	2		1	1	1	1	2		2		2	2	2	2	1	1
12	9.00	2	Chitoor	1	0.01	1.00	1	1	4	2		1	1	2		2		2		2	2	2	2	2	1
13	3.00	2	Vellore	1	0.03	3.00	2														2	2	2	2	2
14	5.00	2	Vellore	1	0.05	5.00	1	1	3	1	2	1	3	2		2		2		2	2	2	2	2	1
15	1.00	2	Vellore	1	0.03	3.00	1	1	7	2		2		2		2		2		2	2	2	2	2	2
16	7.00	1	Manipur	1	0.01	1.00	2														2	2	2	2	2
17	4.00	1	Vellore	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
18	2.00	2	Vellore	1	0.02	2.00	2														2	2	2	2	2
19	9.00	1	Vellore	1	0.05	5.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
20	8.00	1	Chitoor	1	0.02	2.00	1	1	3	2		1	1	2		2		2		2	2	2	2	2	2
21	1.00	1	Thiruvannamalai	1	0.01	1.00	1	1	4	2		2		1	4	2		2		2	2	2	2	2	1
22	4.00	1	Tamil nadu	1	0.05	5.00	1	1	1	2		2		1	10		2	2		2	2	2	2	2	2
23	0.08	2	Thiruvannamali	1	1.00	30.00	2														2	2	2	2	2
24	9.00	1	Jharkhand	1	0.01	1.00	2														2	2	2	2	1
25	6.00	2	Vellore	1	0.05	5.00	2														2	2	2	2	2
26	5.00	1	Chittoor	1	0.03	3.00	1	1	6	2		2		2		2		2		2	2	2	2	2	2
27	3.00	2	Chittoor	1	0.03	3.00	1	1	32	2		2		2		2		2		2	2	2	2	2	2
28	4.00	2	Chittoor	1	0.02	2.00	1	1	6	2		1	3	2		2		2		2	2	2	2	2	2
29	2.00	1	Thiruvannamali	1	0.07	7.00	1	1	2	2		2		2		2		2		2	2	2	2	2	1
30	1.00	1	Katpadi	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
31	3.00	2	Katpadi,vellore	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	1
32	1.00	2	Vellore	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	1
33	3.00	2	Vellore	1	0.03	3.00	2																		2
34	3.00	2	Thiruvannamalai	1	0.02	2.00	1	2		2		2		1	1	2		2		2	2	2	2	2	1
35	0.02	1	Vellore	1	0.03	3.00	2																		2
36	1.00	2	Tamil nadu	1	0.03	3.00	1	1	4	2		1	1	2		2		2		2	2	2	2	2	1
37	5.00	2	Gudiyatham	1	0.02	2.00	1	1	2	2		1	4	2		2		2		2	2	2	2	2	1
38	2.00	1	Vellore	1	0.01	1.00	1	1	1	2		2		2		2		2		2	2	2	2	2	2
39	12.00	2	Chittoor	1	0.02	2.00	1	1	7	2		1	3	2		2		2		2	2	2	2	2	1
40	0.03	1	Vellore	1	0.20	20.00	2														1	2	2	1	2
41	3.00	1	Tamil nadu	1	0.03	3.00	2														2	2	2	2	2
42	3.00	2	Vellore	1	0.03	3.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
43	2.00	1	Chitoor	1	0.07	7.00	1	1	5	2		2		2		2		2		2	2	2	2	2	1
44	0.02	1	Vellore	1	0.02	2.00	1	1	5	2		2		2		2		2		2	2	2	2	2	2
45	12.00	1	Vellore	1	0.05	5.00	1	1	2	2		1	3	2		2		2		2	2	2	2	2	2
46	8.00	1	Tamil nadu	1	36.00	1,080.00	2																		2
47	11.00	1	Vellore	1	0.02	2.00	1	1	4	2		2		2		2		2		2	2	2	2	2	2
48	5.00	2	Tripura	1	0.03	3.00	2																		2
49	9.00	1	Vellore	1	0.02	2.00	1	2		2		2		1	2	2		2		2	2	2	2	2	2
50	3.00	1	Vellore	1	0.02	2.00	2																		2

list	time	last	papul	macule	nodule	plaque	patch	purpur	vesicle	bulla	ulcer	erythem	wheal	pustule	erosion	crusting	desqua
.	.		2	2	2	1	2	2	1	2	2	2	2				
.	.		1	2	2	1	2	2	2	2	2	2	2				
.	.		1	2	2	2	2	2	2	2	2	2	2				
.	.		2	2	2	2	2	2	2	2	2	2	2	2	1	1	
.	.		1	2	2	1	2	2	2	2	2	1	2	2	2	2	
.	.		2	2	2	1	2	2	2	2	2	2	2	1	2	2	
not known	.		2	2	2	1	2	2	2	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	
Augmentin	2 days		1	1	2	2	2	2	2	2	2	1	2	2	2	2	
Cefazolin	29/07/15-the day of admission		2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Cefixime,paracetamol	28/0/17-30/07/15	30-Jul-2015	2	2	2	2	2	2	2	2	2	2	1	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	
Inj ceftrixone	7/08/15-8/08/15	08-Aug-2015	1	1	2	2	2	1	2	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		1	2	2	1	2	2	1	2	1	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	
Amoxicilin and clavulinic ac	3 days back	23-Aug-2015	1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	2	
Phenytoin	4/07/15-31/8/15	31-Aug-2015	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		2	2	2	1	2	2	2	2	2	2	2	2	1	1	
.	.		2	1	2	2	2	2	2	2	2	1	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		2	1	2	2	2	2	2	2	2	1	2	2	2	2	
syrup atarax	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
Augmentin	11/09-13/09/15	13-Sep-2015	1	1	2	2	2	2	2	2	2	2	2	2	2	2	
Vaccination	1 month back		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
Atorvatatin,calcium	2 months		1	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	
Ofloxacin,metronidazole	2/9-4/9/15	04-Sep-2015	2	2	2	2	2	2	2	2	2	2	1	2	2	2	
Amoxicilin	30/8/15-1/09/15	01-Sep-2015	2	2	2	2	2	2	2	2	2	2	1	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	
Paracetamol	.	25-Sep-2015	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	1	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
Ofloxacin	past 3 days	17-Jan-2016	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2

face	ul	trunk	ll	scalp	palms	soles	genial	mucosa	mucosa1	genital	eye	nail	temp	pallor	ln	liver	spleen	inv	hb	hbyes	tc	SIRS	tcyes	dc	meta	neu	lym	eos	mon	plat
2	2	1	2	2	2	2	2	2				2	2	2	2	2	2	2												
2	2	1	2	2	2	2	2	2				2	2	2	2	2	2	2												
2	2	1	2	2	2	2	2	2				2	2	2	2	2	2	2												
1	2	1	2	2	2	2	2	2				2	1	2	2	2	2	1	1	13.8	1	1	21,500	1	4	83	9	0	4	1
2	1	1	2	2	2	2	2	2				2	2	2	2	2	2	2												
2	2	1	2	2	2	2	2	2				2	2	2	2	2	2	2												
1	2	1	2	2	2	2	2	2				2	1	2	1	2	2	1	1	13.8	1	1	2,300	1	0	14	34		2	1
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	10.4	1		11,000	1	0	82	15	0	3	1
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	2.5	1		3,400	1	0	40	48	0	12	1
2	2	2	2	2	2	2	2	1	1	2	2	2	1	2	2	2	2	1	1	11.7	1		15,000	1	0	93	4	0	3	1
2	2	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	14.1	1		14,000	1	0	75	20	1	4	1
1	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	10.4	1		14,200	1	0	60	33	0	6	1
2	1	2	1	2	2	2	2	2				2	1	1	2	2	2	1	1	11.1	1	1	20,900	1	0	87	12	0	1	1
2	1	2	1	2	2	2	2	2				2	1	2	2	2	2	2												
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
2	2	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
2	1	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
2	1	2	1	2	1	2	2	1	1	2	2	2	1	2	1	2	2	1	1	14.1	1		10,800	1	0	63	27	0	10	1
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	13.9	1		2,900	1	3	49	40	1	7	1
2	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	10.6	1		14,800	1	0	62	32	0	6	1
2	1	2	1	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
1	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
1	2	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	9.8	1		6,300	1	0	46	35	10	9	1
2	1	2	1	2	2	1	2	2				2	2	2	2	2	2	2												
1	2	1	2	2	2	2	2	2				2	1	2	1	2	2	1	1	14.1	1		2,800	1	0	38	49	2	2	1
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	11.3	1		17,300	1	0	36	59	2	3	2
2	2	1	2	2	1	1	2	2				2	2	2	2	2	2	2												
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	10.7	1		6,200	1	0	9	86	3	2	1
2	2	1	1	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
1	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	2		1		13,000	1	0	37	60	0	3	1
1	2	1	2	2	2	2	2	2				2	1	2	1	2	2	1	1	13.3	1		14,100	1	0	69	29	0	2	1
2	2	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
2	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	12.5	1		3,300	1	0	65	24	0	11	1
1	2	2	2	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	2	2	1	1	2	2				2	2	2	2	2	2	2												
1	1	1	1	1	2	2	2	2				2	1	2	2	2	2	1	1	12.0	1		10,600	1	0	40	51		9	1
1	2	1	2	2	2	2	2	2				2	1	2	2	2	2	1	1	12.0	1	1	22,600	1	0	67	24	1	8	1
1	1	1	2	2	2	2	2	2				2	1	2	1	2	2	1	1	12.2	1		11,800	1	0	41	50	1	8	1
1	1	2	2	2	2	2	2	2				2	1	2	2	2	2	1	1	14.0	1		7,300	1	5	68	21	0	3	1
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	11.6	1		13,700	1	0	72	25	1	2	1
1	2	1	2	2	2	2	1	2				2	1	2	2	2	2	1	1	14.0	1		4,600	1	0	37	44	4	5	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
1	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	11.2	1		9,600	1	0	78	16	2	4	1

playes	crp	crpyes	esr	esryes	urine	uryes	x	to_1	tbillyes	di	diyes	sgot	sgoyes	sgpt	sgpye	alb	albyes	alp	alpyes	ldh	ldhyes	creat	creyes	biopsy	admis	outcor	diagnosis	Other inv
																									2		Milaria,Impetigo	!!!
																									2		Pityriasis Rosea	!!!
																									2		Lichen striatus	!!!
439,000	1	8.2	2		2		1	2				2		2		2		2		2		1	0.32	2	1	1	Staphylococcal scalded skin	Pus-Staph aureua
																									2		Papular urticaria	!!!
																									2		Impetigo	!!!
58,000	2		2		2		1	2				2		1	15	2		2		2		1	0.38	2	1	1	Dengue fever	Dengue serology-positive
																									2		Gianotti crosti syndrome	!!!
340,000	1	40.0	2		1	2	1	2				2		1	11	2		2		2		1	0.31	2	2		Acute urticaria	!!!
140,000	2		2		2		2	2				2		2	26	2		2		2		1	0.48		2		Viral exanthem	!!!
314,000	2		2		2		2	2				2		2		2		2		2		1	0.61	2	1		Anaphylaxis	!!!
310,000	1	3.0	2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
169,000	2		2		1	6	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
533,000	1	66.4	1	35	2		1	2				2		1	17	2		2		2		1	0.39	2	1	1	HSP	Culture blood-non ferment
																									2		Hand foot mouth disease	!!!
																									2		Papular urticaria	!!!
																									2		Hand foot mouth disease	!!!
																									2		Hand foot mouth disease	!!!
256,000	1	4.0	2		2		1	1	0.7	1	0.2	1	34	1	22	1	5	1				1	0.51	1	1	1	Erythema multiforme	!!!
156,000	2		2		2		1	2				1	20	1	22	2		2		2		1	0.34	2	1		Viral exanthem-dengue	Dengue serology positive
182,000	2		2		1	8	1	2				2		2		2		2		2		2		2	2		Viral exanthem	Scrub typhus-negative
																									2		Hand foot mouth disease	!!!
																									2		Infantile eczema	!!!
																									2		Papular urticaria	!!!
																									2		Impetigo	!!!
530,000	2		2		1	16	1	2				2		1	19	2		2		2		2		2	2		Viral exanthem	!!!
																									2		Hand foot mouth disease	!!!
67,000	2		2		2		2	2				2		1	66	2		2		2		1	0.46	2	2		Viral exanthem(dengue)	Dengue seology-positive
	2		2		1	25	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
																									2		Hand foot mouth disease	!!!
143,000	2		2		2		2	2				1	47	1	28	2		2		2		2		2	2		Viral exanthem	!!!
																									2		Gianotti crosti syndrome	!!!
																									2		Hand foot mouth disease	!!!
																									2		Papular urticaria	!!!
																									2		Papular urticaria	!!!
638,000	2		2		1	140	1	1	0.3	1	0.1	1	24	1	9	1	4	1	215	2		1	0.22	2	2		Acute urticaria	!!!
427,000	1	65.0	2		2		2	2				2		1	9	2		2		2		1	0.22	2	1		Acute urticaria	!!!
																									2		Hand foot mouth disease	!!!
35,000	2		2		2		1	2				2		1	52	2		2		2		2		2	2		Rickettsial infection	Weil felix positive
																									2		Infantile eczema	!!!
																									2		Hand foot mouth disease	!!!
151,000	2		2		1	4	2	2				2		2		2		2		2		1	0.26	2	2		Varicella	Tzanck-positive
400,000	1	3.0	2		2		2	2				2		2		2		2		2		2	2.00	2	1	1	Staphylococcal scalded skin	Pus culture and sensitivity
229,000	1	9.0	2		1	5	1	2				2		2		2		2		2		1	0.35	2	2		Viral exanthem	!!!
226,000	1	96.0	2		1	6	1	2				2		1	73	2		2		2		1	0.73	2	2		Acute urticaria	!!!
382,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Icthyosis vulgaris	!!!
219,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Varicella	Tzanck-positive for multinu
																									2		Papular urticaria	!!!
165,000	1	15.0	2		1	3	1	2				2		2		2		2		2		2		2	1	1	Acute urticaria	!!!

50	3.00	1	Vellore	1	0.02	2.00	2																	2
51	3.00	1	Vellore	1	0.20	20.00	2																	2
52	6.00	1	Vellore	1	0.20	20.00	2																	2
53	7.00	2	Vellore	1	0.03	3.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
54	7.00	2	Chittoor	1	0.04	4.00	2																	1
55	0.03	1	Vellore	1	1.00	30.00	2																	2
56	7.00	2	Vellore	1	0.04	4.00	1	1	4	1	3	2		2		2		2		2	2	2	2	2	2
57	3.00	2	Vellore	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
58	2.00	1	West Bengal	1	0.14	14.00	1	2		2		1	7	2		2		2		2	2	2	2	2	1
59	1.00	2	Vellore	1	0.01	1.00	2																	2
60	4.00	1	Vellore	1	0.03	3.00	2																	2
61	13.00	1	Vellore	1	0.14	14.00	2																	1
62	14.00	1	Vellore	1	0.10	10.00	2																	2
63	3.00	1	Vellore	1	0.02	2.00	2																	2
64	7.00	2	Chitoor	1	0.03	3.00	1	1	5	2		2		2		2		2		2	2	2	2	2	2
65	1.00	1	Chittoor	1	0.06	6.00	2																	2
66	1.00	2	Vellore	1	0.04	4.00	2																	1
67	0.06	2	Vellore	1	0.02	2.00	2																	1
68	5.00	1	Vellore	1	0.05	5.00	1	1	10	2		2		2		2		2		2	2	2	2	2	1
69	2.00	1	Vellore	1	0.10	10.00	2														2	2	2	1	2
70	6.00	1	West Bengal	1	0.02	2.00	2														2	2	2	2	2
71	10.00	1	Vellore	1	0.15	15.00	2																		1
72	9.00	1	Jharkhand	1	1.00	30.00	1	1	10	2		2		2		2		2		2	2	2	2	2	1
73	10.00	1	Vellore	1	0.06	6.00	1	1	7	2		2		2		2		2		2	2	2	2	2	2
74	7.00	1	Vellore	1	0.05	5.00	2																		2
75	2.00	2	Chittoor	1	0.01	1.00	1	1	3	2		2		1	3	2		2		2	2	2	2	2	1
76	9.00	1	Vellore	1	0.04	4.00	1	1	3	2		2		2		2		2		2	2	2	2	2	1
77	1.00	1	Vellore	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
78	12.00	1	Vellore	1	0.01	1.00	2																		1
79	4.00	2	vellore	1	0.03	3.00	1	1	3	2		2		2		2		2		1	2	2	2	2	1
80	8.00	1	Andhra Pradesh	1	0.03	3.00	1	1	5	2		2		2		2		2		2	2	2	2	2	2
81	3.00	1	Andhra pradesh	1	0.05	5.00	1	1	4	2		2		2		2		2		2	2	2	2	2	2
82	0.10	2	Chittoor	1	0.03	3.00	1	1	1	2		2		2		2		2		2	2	2	2	2	2
83	7.00	1	Chittoor	1	0.03	3.00	1	1	5	2		2		2		2		2		2	2	2	2	2	1
84	4.00	1	Thiruvannamalai	1	0.07	7.00	2																		2
85	0.04	2	Chittoor	1	0.08	8.00	2																		2
86	9.00	2	Chittoor	1	0.02	2.00	1	1	5	2		2		2		2		2		2	2	2	2	2	1
87	3.00	1	West bengal	1	0.02	2.00	2																		1
88	9.00	2	vellore	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
89	2.00	2	Vellore	1	0.02	2.00	2																		2
90	6.00	1	Kadappa	1	0.03	3.00	2																		2
91	1.00	2	Vellore	1	0.03	3.00	2														2	2	2	1	2
92	15.00	2	Vellore	1	0.03	3.00	1	2		2		2		2		1		2		2	2	2	2	2	1
93	2.00	2	Vellore	1	0.03	3.00	2																		2
94	0.06	1	West bengal	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
95	6.00	2	Vellore	1	0.14	14.00	2														2	2	2	2	1
96	5.00	1	Vellore	1	0.05	5.00	1	1	2	2		2		2		2		2		2	2	2	2	2	1
97	3.00	1	Vellore	1	0.04	4.00	1	1	7	2		2		2		2		2		2	2	2	2	2	2
98	12.00	1	Vellore	1	0.02	2.00	1	1	4	2		2		2		2		2		2	2	2	2	2	1
99	14.00	1	Chittoor	1	0.21	21.00	1	1	30	2		2		2		2		2		2	2	2	2	2	1

.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Levetiracetam	16/2/16-14/3/16	14-Mar-2016	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
.	.		1															
.	.		1	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Oral steroids	.		1	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Atarax	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
atarax	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
Ceftriaxone 5 days back	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
paracetamol	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
Carbamazepine,leveteracet	16/10/15-9/12/15-carbamazepine,9/10	30-Jan-2016	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Paracetamol	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Phenytoin,Phenobarbitone	7/2/16-16/2/16-Phenytoin,17/2/16 to 1	16-Mar-2016	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
Contrast media for MRI	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
Paracetamol,atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	1
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
Paracetamol	.		1	1	2	2	2	1	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Ondansteron,Meftal	14/1/16-17/1/16	17-Jan-2016	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
Amoxicilllin	drc	14-Jan-2016	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Warfarin,leveteracetam	since 2 months		2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	1	2	2	2	1	2	2	2	2	2	1	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Phenytoin,clobazam,topirar	Phenytoin 2/7/15-25/7/15,levipil-27/7/15 ,Valproate-2/		2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2
Cefuroxime	20/04/16-24/4/16	24-Apr-2026	2	1	2	2	2	1	1	2	2	2	2	2	1	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Ceftriaxone	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
details not known	.		2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2

2	1	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2													
2	1	1	2	2	2	2	1	2				2	2	2	2	2	2	2													
2	1	1	1	2	1	2	1	2				2	2	2	2	2	2	2													
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	12.0	1		12,400	1	0	80	9	0	11	1
1	1	1	1	2	2	2	2	2				2	2	2	1	2	2	1	1	11.2	1		11,700	1	0	39	40	10	9	1
1	2	2	2	1	2	2	2	2				2	2	2	2	2	2	2													
2	2	2	1	2	2	2	2	2				2	2	2	2	2	2	1	1	12.0	1		9,000	1	0	49	39		9	1
1	1	1	1	1	2	2	1	2				2	1	2	1	2	2	1	2		2			2						2
2	1	2	1	2	2	2	2	2				2	1	2	2	2	2	1	1	11.0	1	1	23,100	1	0	61	34		5	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	1	2	1	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2													
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	12.4	1		9,600	1	0	63	30	1	6	1
2	2	2	2	2	2	2	2	1	1	2	1	2	1	2	1	2	2	1	1	13.0	1	1	16,500	1	0	51	40	1	8	1
1	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	1	2		1		11,500	1	0	74	25		1	1
1	1	1	1	2	2	2	2	1	1	2	2	2	1	2	1	2	2	1	1	9.9	1		26,000	1	0	65	30	1	4	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	1	1	12.2	1		13,900	1	0	59	38	1	2	1
2	1	1	2	2	2	2	2	2				2	2	2	2	2	2	1	1	9.9	1		10,100	2						1
1	1	1	1	2	2	2	2	2				2	1	1	1	2	2	1	1	8.0	1	1	30,800	1	0	63	27	2	8	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	1	1	2	2	2	2	2	2				2	2	2	2	2	2	1	1	12.8	1		6,900	1	0	50	41	2	7	1
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	10.1	1		7,600	1	0	53	28	16	2	1
2	1	2	1	2	1	1	2	1	1	2	2	2	1	2	2	2	2	1	1	12.2	1	1	14,000	1	0	84	5	1	10	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
1	2	2	1	2	1	2	2	2				2	1	2	2	2	2	1	1	11.3	1	1	18,100	1	0	22	71	4	3	1
1	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	10.6	1		9,000	1	0	56	20	18	1	1
1	2	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	7.4	1		10,500	1	0	43	52	1	4	1
1	1	2	1	2	2	2	2	2				2	2	2	2	2	2	1	1	13.6	1		10,200	1	0	78	14	2	5	1
1	2	1	2	2	2	2	2	2				2	2	2	2	2	2	1	1	12.0	1		8,700	1	0	84	13	0	3	1
1	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	11.5	1		4,400	1	0	75	20	1	4	1
1	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	11.8	1		16,500	1	0	43	44	8	5	1
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	10.8	1	1	15,900	1	0	34	63		4	1
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	10.2	1		9,400	1	0	66	22	0	12	1
2	2	1	1	2	2	2	2	2				2	2	2	2	2	2	1	1	9.6	1		14,600	1	0	56	34	4	9	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	9.9	1		39,600	1	0	83	10	5	2	1
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	11.6	1		13,600	1	0	66	26	2	6	1
2	1	1	1	1	2	2	2	2				2	1	2	1	2	2	1	1	12.3	1		7,000	1	0	41	42	1	16	1
1	1	1	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2													
2	2	1	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2													
2	2	1	1	2	2	2	2	2				2	2	2	2	2	2	1	2		2			2						1
1	1	2	2	2	2	2	2	2				2	2	2	2	2	2	2													
1	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	10.2	1		13,600	1	0	31	53	3	13	1
2	1	1	2	2	2	2	2	1	1	2	2	2	1	2	2	2	2	1	1	12.4	1	1	21,900	1	0	79	11	3	7	1
1	1	1	1	2	2	2	2	1	1	2	1	2	1	2	2	2	2	1	1	10.1	1		8,400	1	0	76	16	2	6	1
1	1	1	1	2	1	2	2	2				2	1	2	1	2	2	1	1	11.0	1		13,400	1	0	56	31	0	13	1
2	1	1	1	2	2	2	2	2				2	1	2	1	1	2	1	1	11.2	1		6,000	1	0	54	18	18	10	1
2	2	2	1	2	2	2	2	2				2	2	2	1	1	2	1	1	12.0	1		6,100	2						1

																								2		Hand foot mouth disease	!!!
																								2		Scabies	!!!
																								2		Scabies	!!!
197,000	2		2		1	22	1	2			2		2		2		2		2		2		2	2		Viral exanthem	!!!
446,000	2		2		2		1	1	0.2	1	0.1	1	41	1	16	1	3	1	127	2		1	0.23	2	1	1	Drug hypersensitivity syndron	!!!
																								2		Seborrheic dermatitis	!!!
356,000	1	14.0	2		2		1	2			2		2		2		2		1	533	2		1	1	1	Leucocytoclastic vasculitis	Serum complements-norm
	2		2		2		2	2			2		2		2		2		2		2		2	2		varicella	Tzanck-positive
150,000	1	10.0	1	34	2		1	1	0.4	1	0.1	1	23	1	16	1	4	1	125	1	546	1	0.80	1	1	1	Henoch Schonlein purpura	DIF-IgA,IgM positive
																								2		Papular urticaria	!!!
																								2		Hand foot mouth disease	!!!
140,000	1	3.0	2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	C3,C4-normal
544,000	2		2		1	4	1	2		2		1	18	1	13	2		2		2		1	0.48		1	1	Erythema multiforme	!!!
275,000	2		2		2		2	2				2		2		2		2		2		1	0.27	2	2		Orofacial herpes	Tzanck-positive
246,000	2		2		1	26	1	1	1.9	1	1.0	1	68	1	50	1	4	1	262	1	186	1	0.50		2		Viral exanthem	Aso-92
																								2		Papular urticaria	!!!
176,000	1	6.0	2		1	16	2	2				1	34	1	15	2		2		2		2		2	2		Acute urticaria	!!!
310,000	2		2		1	4	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
190,000	2		2		1	40	2	2				2		1	22	2		2		2		1	0.23	2	1		Viral exanthem	Scrub typhus,measles-neg
																								2		Papular urticaria	!!!
																								2		Papular urticaria	!!!
352,000	2		1	10	1	2	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
156,000	2		2		2		1	2				1	54	1	132	2		2		2		2		2	1	1	Drug hypersensitivity syndron	!!!
282,000	2		2		1	10	1	2				2		1	11	2		2		2		1	0.41	2	1	1	erythema multiforme	cold agglutination-negative
																								2		Papular urticaria	!!!
384,000	2		2		2		2	2				2		1	12	2		2		2		2		2	2		Papular erythema multiforme	Cold agglutination-negativ
126,000	1	3.0	2		2		1	2				1	46	1	56	2		2		2		1	0.56	2	1	1	Drug hypersensitivity syndron	!!!
156,000	2		2		1	6	2	2				2		2		2		2		2		2	2.00	2	2		Acute urticaria	!!!
326,000	1	22.0	2		2		2	2				2		1	19	2		2		2		1	0.53		2		Acute urticaria	!!!
424,000	1	15.0	2		1	1	2	2				2		2		2		2		2		2		2			Acute urticaria	!!!
192,000	2		2		1	8	2	2				2		1	12	2		2		2		2		2	2		Viral exanthem	!!!
450,000	1	3.0	2		2		2	2				2		1	18	2		2		2		1	0.30	2	1	1	Staphylococcal scalded skin	Pus culture-staph aureus
450,000	2		2		1	8	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
209,000	2		2		1	6	2	2				2		1	20	2		2		2		2		2	2		Viral exanthem	Spotted fever-negative
239,000	2		2		1	3	2	2				2		2		2		2		2		2		2	2		Impetigo	pus-staph aureus
																								2		Gianotti crosti syndrome	!!!
391,000	2		2		2		2	2				1	54	1	52	1	3	2		1	600	1	0.46	1	2		Acute generalised exanthema	Biospy suggestive of AGE
272,000	2		2		2		2	2				2		1	18	2		1	290	2		1	0.34	2	2		Viral exanthem	!!!
335,000	2		2		2		2	2				2		2		2		2		2		1	0.33	2	2		Varicella	Tzanck-MNGS
																								2		Milaria	!!!
																								2		Irritant dermatitis	!!!
																								2		Hand foot mouth disease	!!!
310,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Ecchymosis,Cortical venous t	APTT-64.3,PT-42.4
																								2		Impetigo	!!!
328,000	2		2		2		2	1	0.2	1	0.1	1	85	1	114	2		1	156	2		1	0.25		2		Viral exanthem	!!!
674,000	2		2		2		2	2				2		2		2		2		2		1	0.38	2	2		Steven johnson syndrome	Weil felix-negative
130,000	1	5.0	2		1	60	1	1	0.6	1	0.3	1	106	1	32	1	4	1	146	2		1	0.46	1	1	1	Toxic epidermal necrolysis	tzanck-negative
202,000	2		2		2		2	2				2		1	14	2		2		2		2		2	2		Rickettsial infection	Weil felix -positive
533,000	2		2		2		2	1	28.4	1	26.2	1	75	1	51	1	4	1	411	2		1	0.59	2	1	1	dress	hep A IgM-positive
156,000	2		2		2		2	1	1.4	1	0.3	1	51	1	23	1	2	1	484	1	443	1	0.34	1	1		HSP	!!!

100	1.00	1	Chittoor	1	0.03	3.00	1	1	3	2		1	3	2		2		2		2	2	2	2	2	1
101	6.00	1	Vellore	1	0.01	1.00	1	1	1	2		1	10	2		2		2		2	2	2	2	2	1
102	2.00	1	Patna	1	0.02	2.00	2																		2
103	2.00	1	Andhra pradesh	1	2.00	60.00	2																		2
104	3.00	2	Vellore	1	2.00	60.00	2																		2
105	8.00	1	Chittoor	1	0.04	4.00	1	1	5	1	3	2		2		2		2		2	2	2	2	2	2
106	0.03	1	Vellore	1	0.03	3.00	2																		2
107	6.00	2	Polur,tamil nadu	1	0.03	3.00	1	1	3	1	5	2		2		2		2		2	2	2	2	2	2
108	4.00	2	Vellore	1	0.14	14.00	2																		2
109	15.00	2	Tiruvannamali	1	0.15	15.00	1	1	30	2		2		2		2		2		2	2	2	2	2	1
110	0.06	2	Tamil nadu	1	0.01	1.00	2																		2
111	5.00	1	Thiruvallur,tamil r	1	0.04	4.00	1	1	4	2		2		2		2		2		2	2	2	2	2	1
112	3.00	1	Vellore	1	0.03	3.00	2														2	2	2	2	2
113	0.01	1	Vellore	1	0.02	2.00	2																		2
114	2.00	1	Tamil nadu	1	0.14	14.00	1	1	20	2		2		1	5	2		2		2	2	2	2	2	2
115	7.00	1	Vellore	1	0.03	3.00	1	2		2		1	3	2		2		2		2	2	2	2	1	1
116	1.00	1	Chittoor	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
117	1.00	1	Chittoor	1	1.00	30.00	1	1	6	2		2		2		2		2		2	2	2	2	2	2
118	13.00	1	Vellore	1	1.00	30.00	1	1	1	2		1	1	2		1	1	2		2	2	2	2	2	2
119	4.00	1	Vellore	1	1.00	30.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
120	0.03	2	Tiruvannamalai	1	2.00	60.00	1	1	7	2		2		2		2		2		2	2	2	2	2	2
121	0.03	1	Vellore	1	0.01	1.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
122	15.00	1	Assam	1	0.03	3.00	2																		2
123	14.00	1	Bangladesh	1	0.10	10.00	2																		2
124	0.05	2	Chittoor	1	0.04	4.00	1	1	5	2		2		2		2		2		2	2	2	2	2	1
125	5.00	2	Chittoor,andhra	1	0.12	12.00	1	1	7	2		2		2		2		2		2	2	2	2	2	1
126	3.00	2	Vellore	1	0.02	2.00	1	1	4	2		2		2		2		2		2	2	2	2	2	2
127	0.09	2	Andhra pradesh	1	0.04	4.00	1	1	5	2		2		2		2		2		2	2	2	2	2	1
128	13.00	2	Chittoor	1	0.05	5.00	1	1	5	2		1	5	2		2		2		2	2	2	2	2	1
129	7.00	2	Vellore	1	0.01	1.00	1	2		2		2		2		1	1	2		2	2	2	2	2	2
130	10.00	1	Vellore	1	0.02	2.00	1	1	1	2		1	3	2		2		2		2	2	2	2	2	2
131	0.09	1	Vellore	1	0.03	3.00	2																		2
132	0.09	2	Vellore	1	0.07	7.00	1	1	10	2		2		2		2		2		2	2	2	2	2	1
133	7.00	1	Vellore	1	0.04	4.00	1	1	4	2		2		2		2		2		2	2	2	2	2	1
134	1.00	2	Chittoor	1	0.02	2.00	2																		2
135	2.00	1	vellore	1	0.05	5.00	1	1	7	2		2		2		2		2		2	2	O		2	2	1
136	8.00	1	Vellore	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
137	2.00	1	vellore	1	0.04	4.00	2																		2
138	4.00	1	Vellore	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
139	0.03	1	Vellore	1	0.07	7.00	2														2	2	2	2	2
140	0.02	1	Tamil nadu	1	0.07	7.00	2																		2
141	7.00	1	Vellore	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
142	9.00	2	West bengal	1	0.03	3.00	2																		2
143	3.00	2	Vellore	1	0.01	1.00	1	2		2		1	2	1	2	2		2		2	2	2	2	2	1
144	10.00	2	Vellore	1	0.05	5.00	2																		1
145	12.00	2	Katpadi	1	0.03	3.00	1	1	5	2		1	3	2		2		2		2	2	2	2	2	1
146	3.00	1	Vellore	1	0.03	3.00	2														2	2	2	2	2
147	0.08	1	Krishnagiri	1	0.02	2.00	1	1	6	2		2		1	2	2		2		2	2	2	2	2	1
148	10.00	2	Vellore	1	0.01	1.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
149	5.00	1	Vellore	1	0.02	2.00	2														2	2	2	1	2

Yes	details not known		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
emeset,rantac	.		2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2
.	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
B lactam antibiotics	.		1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2
Amoxiciilin for 2 days	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Homeopathy medications s	.		2	2	2	1	2	2	2	2	2	2	1	2	2	1	2	2
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1
.	.		1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
.	.		2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Paracetamol	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Piptaz-but started after ons	.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Phenytoin since 23/05/16	.		1	`			2	2	2	2	2	2	1	2	2	2	2	2
Cefixime-after onset	.		1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Cefotaxime-past 4 days	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Amikacin,ceftriaxone	14/12/15-18/12/15	18-Dec-2015	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
Septran	9/6/16-16/6/16	16-Jun-2016	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Ibuprofen	1 day		2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Carbamazepine,valproate	21/03/16-till present		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	1	1	
Cefixime,ceftriaxone,mefen	27/12-29/12-cefixime,30/12-31/12-ceftriaxone,27/11 to 30/11-mefenamic acid		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2

1	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	11.4	1		7,600	1	0	36	59	0	5	1
2	2	2	1	2	2	2	2	2				2	1	2	2	2	2	1	1	12.6	1		10,300	1	0	71	18	2	9	1
1	2	2	2	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	1	2	1	2	2	1	1	2	2	2	2	2	2	2	2	2												
1	1	2	2	2	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	1	2	2	2	2	2				2	1	2	1	2	2	1	1	12.0	1		7,800	1	0	48	40		12	1
2	1	2	2	2	2	2	2	2				2	2	2	2	2	2	2												
1	1	2	1	2	2	2	2	2				2	1	2	2	2	2	1	1	14.9	1		15,300	1	0	81	17	0	2	1
1	2	2	2	1	2	2	2	2				2	2	2	2	2	2	2												
1	1	1	2	2	1	2	2	1	1	2	2	2	2	2	2	2	2	1	1	7.8	1	1	4,600	1	5	70	21		4	1
1	1	1	2	2	2	2	2	1	2	2	1	2	2	2	2	2	2	2												
1	1	1	2	2	2	2	2	2				2	2	2	2	2	2	1	1	12.9	1		11,200	1	0	91	7	2	0	1
1	2	2	2	2	2	2	2	2				2	2	2	2	2	2	2												
1	1	2	1	2	1	1	2	2				2	2	2	2	2	2	2												
2	2	1	2	2	1	1	2	2				2	1	2	1	2	2	1	1	9.9	1	1	16,100	1	0	61	24	1	14	1
1	1	1	2	2	2	2	2	2				2	2	2	2	2	2	2												
1	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	12.5	1		7,500	1	0	35	59	0	6	1
1	1	1	1	2	1	2	2	1	1	2	1	2	1	2	1	2	1	1	1	12.1	1	1	34,400	1	0	81	16	1	2	1
2	1	1	1	2	1	2	1	2				2	1	2	2	1	2	1	1	12.6	1	1	2,600	1	0	45	51	0	4	1
2	1	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
1	2	2	2	1	2	2	2	2				2	2	2	2	2	2	2												
2	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	16.4	1		13,300	1	6	25	59	0	7	1
1	2	1	2	1	2	2	2	2				2	1	2	1	2	2	2												
2	1	1	1	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2												
1	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	8.2	1		5,900	1	0	36	63	2	4	1
1	1	1	1	2	2	2	1	1	2	1	1	2	2	2	2	2	2	1	1	10.9	1		9,600	1	0	34	53	2	11	1
2	1	1	1	2	2	2	2	2				2	2	1	2	2	2	1	1	12.0	1		23,000	1	0	92	3	0	5	1
1	1	1	1	2	2	2	2	2				2	2	2	1	2	2	1	1	8.2	1		5,900	1	0	50	45	0	5	1
2	2	1	1	2	2	2	2	2				2	2	2	1	2	2	1	1	14.5	1		3,600	1	0	25	52	0	23	1
1	2	1	2	2	2	2	2	2				2	1	2	2	2	2	1	1	11.5	1		16,000	1	0	71	24	2	3	1
2	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	11.5	1	1	17,200	1	0	82	14	1	3	1
2	1	2	1	2	1	1	2	1	1	2	2	2	2	2	2	2	2	2												
1	2	1	2	2	2	2	2	2				2	1	2	1	2	2	1	1	8.8	1	1	46,500	1	1	50	34	4	10	1
1	1	2	1	2	1	1	2	1	1	2	1	2	1	2	2	2	2	1	1	11.8	1	1	6,800	1	0	73	21	0	6	1
2	1	1	1	2	2	2	2	2				2	2	2	2	2	2	1	2		1		6,000	1	0	68	22	2	8	1
2	1	1	1	2	2	2	2	2				2	1	2	1	2	2	1	1	9.6	1		8,700	1	0	20	60	13	7	1
1	2	1	2	2	2	2	2	2				2	1	2	2	2	2	1	1	14.1	1		21,200	1	0	77	19	0	4	1
1	2	1	2	2	2	2	2	2				2	2	2	2	2	2	1	2		1		9,700	1	0	44	48	3	5	1
1	2	1	1	1	1	2	2	2				2	2	2	2	2	2	2												
1	2	2	2	1	2	2	2	2				2	2	2	2	2	2	2												
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
1	1	1	1	2	2	2	2	2				2	1	2	2	2	2	1	1	11.0	1		12,500	1	0	43	53	1	3	1
2	1	2	1	2	2	2	2	2				2	2	2	2	2	2	2												
1	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	2	1	1	12.0	1		13,600	1	0	52	30	8	10	1
2	1	1	1	2	2	2	2	2				2	2	2	1	2	2	1	2		1		8,600	1	0	37	46	10	7	1
2	1	2	1	2	2	2	2	2				2	1	2	2	2	2	1	2		1		18,500	1	0	90	4	4	2	1
1	1	1	1	2	2	2	2	2				2	2	1	1	2	2	1	1	12.5	1	1	22,900	1	3	43	41	2	9	1
1	2	1	2	2	2	2	2	2				2	1	2	1	2	2	1	1	11.1	1		11,100	1	0	44	46	0	10	1
1	1	1	1	1	2	2	2	2				2	2	2	2	2	2	1	2		2			2						2
1	2	1	2	2	2	2	2	2				2	2	2	2	2	2	1	1	13.2	1		11,400	1	0	64	30	1	5	1

22,000	2		2		2		2	2				1	175	1	66	2		2		2		2		2	1	1	Viral exanthem-dengue	Dengue-NS1ag and IgM-p
634,000	2		2		2		2	2				2		1	112	2		2		2		1	0.60	1	1	1	Henoch schonlein purpura	DIF
																									2		Impetigo	!!!
																									2		Hand foot mouth disease	!!!
																									2		Molluscum contagiosum	!!!
233,000	1	28.0	1	59	1	1	2	2				2		1	82	2		2		2		2			1		Dengue fever	Weil fevix-positive
																									2		irritant contact dermatitis	!!!
325,000	2		2		1	2		2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
																									2		Seborrheic dermatitis	!!!
145,000	1	34.0	2		2		2	2				2		2		2		2		2		1	0.47	2	2		acute cutaneous lupus erythe	Dsdna-77,ANA-2+,C3-83,(
																									2		Resolving SSSS	!!!
156,000	2		2		1	2	2	2				2		2		2		2		2		1	0.28	2	2		Acute urticaria	!!!
																									2		Impetigo	!!!
																									2		Scabies	!!!
172,000	1	62.0	1	64	2		2	2				1	7	2		2		2		2		2		2	1	1	Kawasaki's disease	!!!
																									2		Acute urticaria/impetigo	!!!
207,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Viral exanthem	!!!
435,000	1	63.0	1	64	1	64	2	2				2		2		2		2		2		2		2	1	1	Acute kawasaaki disease	!!!
111,000	2		2		2		1	1	2.5	1	2.0	1	156	1	46	1	3	1	133	2		1	1.96	2	1	2	Purpura fulminans-meningoc	Blood culture-N.Menigitidis
																									2		Hand foot mouth disease	!!!
																									2		Seborrheic dermatitis	!!!
203,000	1	3.0	2		2		2	1	12.9	1	0.7	2		2		2		2		2		2	0.44	2	2		Viral exanthem	Blood culture-no growth
																									2		Varicella	!!!
																									2		Scabies	!!!
264,000	2		2		2		2	2				2		1	79	2		2		2		1	0.25	2	2		Viral exanthem	!!!
866,000	2		2		2		2	2				2		1	12	2		2		2		1	0.27		1	1	Toxic epidermal necrolysis	Cold agglutination-positive
156,000	2		2		1	38		2				2		1	27	2		2		2		1	0.38	2	2		Viral exanthem	!!!
264,000	1	11.0	2		1	16	1	2				2		1	36	2		2		2		2		2	1		Viral exanthem	!!!
39,000	2		2		2		2	2				2		1	162	2		2		2		2		2			.	!!!
287,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
396,000	2		2		1	31	2	2				2		2		2		2		2		1	0.40	2	1		Acute urticaria	ASO titres-157-normal
																									2		Hand foot mouth disease	!!!
79,000	1	57.0	2		1	36	1	1	14.0	1	5.2	1	48	1	44	2		2		2		2		1	1	1	febrile exanthem	prothrombin time-58.41
570,000	1	38.0	2		2		2	2				2		2		2		2		2		2	0.38	1	2		Erythema multiforme major	!!!
134,000	1	10.0	2		1	20	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
161,000	2		2		2		2	2				1	27	1	10	2		2		2		2		2	2		Drug induced exanthem	!!!
309,000	2		2		1	9	2	2				2		1	16	2		2		2		1	0.42		2		Acute urticaria	!!!
359,000	1	53.0	2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
																									2		Varicella	!!!
																									2		Seborrheic dermatitis	!!!
																									2		Papular urticaria	!!!
535,000	2		2		1	35	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
																									2		Papular urticaria	!!!
180,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Angioedema	!!!
165,000	2		2		2		2	2				1	44	1	18	2		2		2		2		1	2		drug induced exanthem	!!!
420,000	1	18.0	2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
465,000	2		2		2		2	2				2		2		2		2		2		2		2	1	1	Staphylococcal scalded skin	Pus swab-MRSA
249,000	2		2		1	6	2	2				2		1	24	2		2		2		1	0.26	2	1	1	Viral exanthem(measles)	Measles IgM-positive
	2		2		2		2	2				2		2		2		2		2		1	0.60	2	2		Varicella	Tzanck-MNGS
394,000	2		2		2		2	2				2		2		2		2		2		1	0.40	2	2		Acute urticaria	!!!

0.02	1	Vellore	1	0.02	2.00	1	1	1	2		2		2		2		2		2	2	2	2	2	1
7.00	2	Vellore	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	1
12.00	2	West bengal	1	0.02	2.00	1	1	7	2		1	14	1	7	2		2		1	2	2	2	2	1
11.00	1	Bangladesh	1	0.02	2.00	2																		2
4.00	1	Chittoor	1	0.05	5.00	1	1	4	2		2		2		2		2		2	2	2	2	2	2
3.00	1	Vellore	1	0.03	3.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
11.00	2	Vellore	1	0.03	3.00	1	1	4	2		1	4	2		2		2		2	2	2	2	2	2
12.00	1	Tamil nadu	1	0.05	5.00	1	1	6	2		1	6	2		2		2		2	2	2	2	2	2
1.00	1	Vellore	1	0.03	3.00	2														2	2	2	2	2
2.00	1	Andhra pradesh	1	0.01	1.00	2																		1
6.00	2	Chittoor	1	0.05	5.00	1	1	10	2		1	5	2		2		2		2	2	2	2	2	2
11.00	2	Vellore	1	0.04	4.00	1	1	4	2		2		2		2		2		2	2	2	2	2	1
2.00	1	Vellore	1	0.03	3.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
6.00	1	Vellore	1	0.02	2.00	2																		2
0.09	1	Vellore	1	0.01	1.00	2																		2
6.00	1	Vellore	1	0.02	2.00	2																		1
11.00	1	Bangladesh	1	0.02	2.00	2																		2
12.00	1	Vellore	1	0.02	2.00	2																		2
4.00	2	Chittoor	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
6.00	2	West bengal	1	0.02	2.00	2																		2
6.00	1	Vellore	1	0.03	3.00	1	1	3	1	3	2		2		2		2		2	2	2	2	2	2
6.00	1	Vellore	1	0.05	5.00	2																		1
12.00	1	chittoor	1	0.14	14.00	1	1	28	2		1	3	2		2		2		2	2	2	2	2	1
1.00	1	Vellore	1	0.06	6.00	1	1	8	2		2		2		2		2		2	2	2	2	2	2
2.00	1	Vellore	1	0.04	4.00	1	1	2	2		2		2		2		2		2	2	2	2	2	1
0.01	1	Vellore	1	0.04	4.00	2																		2
0.06	2	Vellore	1	0.02	2.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2
3.00	1	Vellore	1	0.02	2.00	2																		2
0.09	1	Vellore	1	0.01	1.00	1	1	2	2		2		2		2		2		2	2	2	2	2	1
0.06	1	Vellore	1	0.02	2.00	2																		2
5.00	1	Vellore	1	0.02	2.00	2																		2
0.09	2	vellore	1	0.02	2.00	2																		2
2.00	1	Chittoor	1	0.04	4.00	1	1	2	2		2		1	2	2		2		2	2	2	2	2	1
0.06	2	Tamil nadu	1	0.01	1.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
8.00	1	West bengal	1	0.07	7.00	2																		2
3.00	1	Vellore	1	0.09	9.00	1	1	10	2		2		2		2		2		2	2	2	2	2	1
0.11	1	Vellore	1	0.02	2.00	1	1	4	2		2		2		2		2		2	2	2	2	2	2
5.00	2	Vellore	1	0.03	3.00	2																		2
11.00	1	Vellore	1	0.01	1.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
0.06	1	Vellore	1	0.02	2.00	1	2		2		1	2	2		2		2		2	2	2	2	2	2
13.00	1	Vellore	1	0.02	2.00	2																		2
5.00	1	Vellore	1	0.01	1.00	2																		2
8.00	2	.	1	0.07	7.00	2																		1
0.06	2	Vellore	1	0.03	3.00	2																		2
0.08	1	Vellore	1	0.02	2.00	2																		2
8.00	1	Vellore	1	0.04	4.00	1	1	5	2		2		2		2		2		2	2	2	2	2	2
2.00	1	Vellore	1	0.02	2.00	2																		2
0.07	2	.	1	0.01	1.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
7.00	1	Vellore	1	0.02	2.00	1	2		2		1	1	2		2		2		2	2	2	2	2	2
14.00	1	Vellore	1	0.07	7.00	2																		1
7.00	1	Vellore	1	0.01	1.00	1	1	2	2		1	4	2		2		2		2	2	2	2	2	2
6.00	1	Vellore	1	0.06	6.00	2																		2
2.00	2	Vellore	1	0.02	2.00	1	1	3	2		2		2		2		2		2	2	2	2	2	2
1.00	1	Thiruvannamalai	1	0.01	1.00	1	1	2	2		2		2		2		2		2	2	2	2	2	2

DPT vaccine,paracetamol	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	
Paracetamol	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
Homeopathy medications	.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	1	2	
Phenytoin,cefixime	16/10/15-phenytoin ,17/10/15-19/10/1	19-Oct-2015	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	
Albendazole	2 days back		2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		1	2	2	2	2	2	1	1	2	2	2	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
Amoxicillin,prednisolone	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	
Paracetamol	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		2	2	2	1	2	2	2	1	2	2	2	2	2	1	2	
Paracetamol	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Augmentin	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	
paracetamol,augmentin	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
Cefixime-since 3 days	.		1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	
.	.		2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	

DPT vaccine,paracetamol	.		2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
Paracetamol	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
Homeopathy medications	.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	2	2	1	2	2	2	2	1	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	1	2
Phenytoin,cefixime	16/10/15-phenytoin ,17/10/15-19/10/1	19-Oct-2015	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Albendazole	2 days back		2	2	2	2	2	2	2	2	2	2	2	1	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	2	2	2	2	1
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		1	2	2	2	2	2	1	1	2	2	2	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	2	2	2	2	1
.	.		1	2	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
Amoxicillin,prednisolone	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	1	2	2	2	2	2	2	2	2	2
Paracetamol	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	1	2	2	2	1	2	2	2	2	2	1	2
Paracetamol	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Augmentin	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		2	2	2	1	2	2	2	2	2	2	2	2	2	1	2
paracetamol,augmentin	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	1	2	2	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
Cefixime-since 3 days	.		1	2	2	2	2	1	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	1	2	2	2	2	2
.	.		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
.	.		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
atarax	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
.	.		2	2	2	2	2	2	2	2	2	1	2	2	2	2	1

354,000	1	96.0	2		1	3	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
357,000	2		2		2		2	2				2		1	7	2		2		2		1	0.21	2	1	1	Acute urticaria	!!!
364,000	2		2		1	20	1	1	0.3	1	0.1	1	29	1	19	1	3	1	56	1	441	1	0.32	1	1	1	Paraneoplastic pemphigus	Tzanck-acantholytic cells,I
																									2		Papular urticaria	!!!
205,000	1	35.0	2		1	14	2	2				2		1	19	2		2		2		2		2	2		Acute urticaria	!!!
146,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Papular erythema multiforme	Cold agglutination-negativ
368,000	1	9.0	1	12	1	12	1	2				2		2		2		2		2		1	0.40	1	1	1	Small vessel vasculitis	C3-98.5,C4-16.2
100,000	1	98.0	2		1	14	1	1	8.5	1	8.3	1	53	1	17	1	2	1	154	2		1	0.66	2	2	1	cellulitis	!!!
																									2		Impetigo	!!!
162,000	2		2		2		2	2				1	42	1	56	2		2		2		2		2	2		drug induced exanthem	!!!
374,000	1	66.0	1	96	2		1	1	1.3	1	0.5	1	37	1	78	1	3	1	178	2		2		2	1	1	Purpura fulminans(rickettsial)	Weil felix-positive
261,000	2		2		2		2	1	0.2	1	0.1	1	16	1	12	1	4	1	153	2		1	0.41	1	1	1	Acute generalised exanthema	!!!
200,000	1	56.0	2		2		2	2				2		2		2		2		2		2		2	1	1	Staphylococcal scalded skin	!!!
																									2		Hand foot mouth disease	!!!
415,000	2		2		1	2	2	2				2		2		2		2		2		2		2	1	1	Acute urticaria	!!!
																									2		Irritant contact dermatitis	!!!
																									2		Papular urticaria	!!!
																									2		Papular urticaria	!!!
301,000	2		2		2		2	2				2		2		2		2		2		2		2	1	1	Staphylococcal scalded skin	Pus c/s-staph
																									2		Papular urticaria	!!!
	1	99.0	2		2		1	2				2		1	6	2		2		2		2		2	1	1	febrile exanthem	!!!
376,000	1	88.0	2		1	2	2	2				2		1	14	2		2		2		1	0.31	2	2		Acute urticaria	!!!
144,000	2		2		2		2	2				2		2		2		2		2		1	0.43	2	1	1	Acute lupus erythematosus	Ana-posotive
456,000	1	88.0	2		2		2	2				2		2		2		2		2		2		1	1		Rickettsial infection	Weil felix-positive
																									2		Hand foot mouth disease	!!!
																									2		Seborrheic dermatitis	!!!
134,000	1	75.0	2		2		2	2				2		1	9	2		2		2		1	0.71	2	1	1	staphylococcal scarlatina	Pus-MRSA
																									2		Bullous impetigo	!!!
271,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Viral exanthem	!!!
																									2		Hand foot mouth disease	!!!
197,000	1	3.0	1	7	1	40		2				2		2		2		2		2		1	0.28	2	2		Acute urticaria	!!!
																									2		Papular urticaria	!!!
250,000	1	92.0	2		1	44	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
422,000	1	3.0	2		2		2	2				2		1	21	2		2		2		1	0.12	2	2		Viral exanthem	!!!
																									2		Impetigo	Grams-gpc's
412,000	1	8.0	2		1	18	2	2				2		2		2		2		2		2		2	2		Viral exanthem	Weil felix-negative
377,000	2		2		1	8	2	2				2		1	12	2		2		2		1	0.41	2	2		Viral exanthem	!!!
																									2		Pityriasis rosea	!!!
213,000	2		2		1	3	2	2				2		2		2		2		2				2	2		Viral exanthem	!!!
360,000	2		2		1	42		2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
258,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
																									2		Acute urticaria	!!!
535,000	1	4.0	1	28	2		2	2				2		1	24	2		2		2		1	0.26	1	1		Henoch schonlein purpura	DIF
609,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
																									2		Papular urticaria	!!!
80,000	2		2		2		2	2				2		2		2		2		2		2		2	2		Viral exanthem	!!!
																									2		Hand foot mouth disease	!!!
																									2		Viral exanthem	!!!
276,000	2		2		1	2	2	2				2		2		2		2		2		1	0.48	2	2		Acute urticaria	!!!
	2		2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
530,000	2		2		1	96	2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
	2		2		2		2	2				2		2		2		2		2		2		2	2		Acute urticaria	!!!
373,000	2		2		2		2	2				2		2		2		2		2		1	0.32	2	2		Acute urticaria	!!!
534,000	2		2		2		2	2				2		2		2		2		2		2		2	1	1	Staphylococcal scalded skin	!!!

Slno	Serial no	<IDNUM>
Age	Days/Months/Years	##.##
Name	Patient's name	
_____		
Sex (1=Male,2=Female)	Male/Female	#
Address	Patients address	
_____		
Skin	Skin lesions	# (1=Yes, 2=No)
Duration	Days/Months/Years	##.##
Systemic	Systemic symptoms	# (1=Yes, 2=No)
Fever	Present/Absent	# (1=Yes, 2=No)
fD	Fever duration	## days
Joint	Joint pain/swelling	# (1=Yes, 2=No)
jd	Joint pain duration	## days
Gastro	Pain,vomiting,loose stools	# (1=Yes , 2=No)
Gd	Gastro duration	## days
Respir	Respiratory system	# (1=Yes, 2=No)
rd	Resp duration	## days
CNS	Central nervous system	# (1=Yes, 2=No)
cd	Central duration	## days
CVS	Cardiovascular system	# (1=Yes, 2=No)
cvd	Cardio duration	## days
Others	Other complaints	# (1=Yes, 2=No)
Family)	Family history	# (1=Yes, 2=No
Past	Diabetes	# (1=Yes, 2=No)
	Tuberculosis	#
	Atopy	#
Drug	History of drug intake	# (1=Yes , 2=No)

List	List of drugs	
Time	Time line	
Last dose	Last dose	<dd/mm/yyyy>
Types	Types of skin lesions	
Papul	Papules	# (1=Yes, 2=No)
Macule	Macules	#
Nodule	Nodules	#
Plaque	Plaque	#
Patch	Patch	#
Purpur	Purpuric	#
Vesicle	Vesicles	#
Bulla	Bulla	#
Ulcer	Ulcer	#
Erythem	Erythema	#
Wheal	Wheals	#
Pustule	Pustule	#
Erosion	Erosion	#
Crusting	Crusting	#
Desqua	Desquamation	#
Site	Site of involvement	
Face	Face	# (1=Yes, 2=No)
UL	Upper limb	#
Trunk	Trunk	#
LL	Lower limb	#
Scalp	Scalp	#
Palms	Palms	#
Soles	Soles	#
Genial	Genitilia	#
Mucosa	Eye,genital,oral	# (1=Yes, 2=No)
Mucosa	Oral	#
	Genital	#
	Eye	#
Nail	Nail involvement	# (1=Yes, 2=No)
Temp	Temperature	# (1=Febrile, 2=Afebrile)
Pallor	Pallor	# (1=Present, 2=Absent)
LN	Lymphadenopathy	# (1=Present, 2=Absent)
Systemic	Systemc examination	
Liver	Hepatomegaly	# (1=Present, 2=Absent)
Spleen	Splenomegaly	# (1=Present, 2=Absent)

Inv	Investigations	# (1=Present, 2=Absent)
Hb	Haemoglobin	# (1=Yes, 2=No)
hbyes	Haemoglobin yes	##.# (gm/dl)
TC	Total count	# (1=yes, 2=no)
tcyes	Total count yes	#####
DC	Differential count	# (1=yes, 2=no)
Meta	Metamyelocyte/bandform	#
Neu	neutrophil	###
Lym	Lymphocyte	##
Eos	Eosinphil	##
Mon	Monocyte	##
Plat	Platelet count	#(1=yes,2=no)
Playes	Platelet yes	######
CRP	CRP	#(1=yes,2=no)
CRPYes	CRP yes	##.#
ESR	ESR	#(1=yes,2=no)
ESRyes	ESR yes	##
Urine	Urine uncentrifuged for WBCs	#(1=yes,2=no)
Uryes	Urine cent yes	##
X RAY	Chest X Ray	# (1=Yes, 2=No)
To Bil	Total bilirubin	#(1=yes,2=no)
Tbillyes	Total bilirubin yes	##.##
Di Bil	Direct bilirubin	# (1=yes,2=no)
Diyes	Direct bilirubin yes	##.##
SGOT	SGOT	# (1=yes,2=no)
SGOyes	SGOT yes	###
SGPT	SGPT	# (1=yes,2=no)
SGPyes	SGPT yes	###
ALB	Albumin	# (1=yes,2=no)
Albyes	Albumin yes	#.#

ALP	Alkaline phosphatase	# (1=yes,2=no)
ALPyes	Alkaline phosphatase yes	###
LDH	LDH	# (1=yes,2=no)
LDHyes	LDH yes	###
Creat	Serum creatinine	#(1=yes,2=no)
Creyes	Serum creatinine yes	#.##
Biopsy	Biopsy	#(1=yes,2=no)
Others	other inv	
Admission	Patient admitted	# (1=Yes,2=No)
DOA	Date of admission	<dd/mm/yyyy>
DOD	Date of discharge	<dd/mm/yyyy>
Outcome	Clinical outcome	# (1=Improved,2=Not)

Diagnosis	Diagnosis

Dr. Parthi

OFFICE OF RESEARCH
INSTITUTIONAL REVIEW BOARD (IRB)
CHRISTIAN MEDICAL COLLEGE, VELLORE, INDIA.

Dr. B.J. Prashantham, M.A., M.A., Dr. Min (Clinical)
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Dr. Alfred Job Daniel, D Ortho, MS Ortho, DNB Ortho
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Dr. Nihal Thomas,
MD., MNAMS., DNB (Endo), FRACP (Endo), FRCP (Edin), FRCP (Glasg)
Deputy Chairperson
Secretary, Ethics Committee, IRB
Additional Vice Principal (Research)

September 28, 2015

Dr. Parthiban U
PG Registrar
Department of Dermatology
Christian Medical College,
Vellore 632 004.

Sub: **Fluid Research Grant NEW PROPOSAL:**
Study of cutaneous manifestations in children presenting to the pediatric emergency department.
Parthiban.U, Employment number: 33695, post graduate resident-dermatology 1. Dr. Renu George, employment number: 02505, Dermatology unit i, Dr. Debashish Das Adhikari, emp. no:50132, Paediatric Emergency

Ref: IRB Min No: 9572 [OBSERVE] dated 05.08.2015

Dear Dr. Parthiban U
The Institutional Review Board (Blue, Research and Ethics Committee) of the Christian Medical College, Vellore, reviewed and discussed your project titled "Study of cutaneous manifestations in children presenting to the pediatric emergency department" on August 05th 2015.

I enclose the following documents:-

1. Institutional Review Board approval 2. Agreement

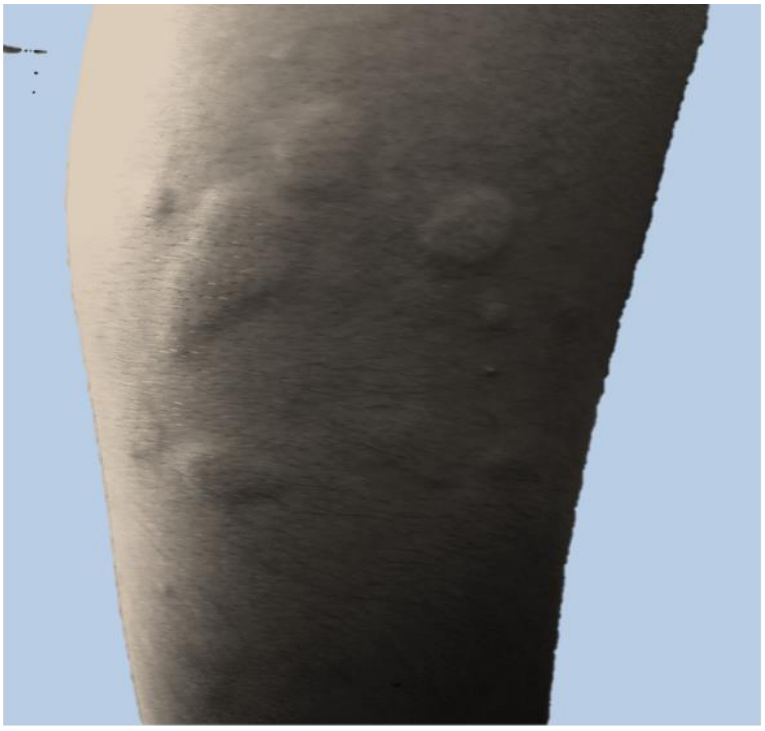
Could you please sign the agreement and send it to Dr. Nihal Thomas, Addl. Vice Principal (Research), so that the grant money can be released.

With best wishes,

Dr. NIHAL THOMAS
MD.,MNAMS.,DNB(Endo),FRACP(Endo),FRCP(Edin),FRCP(Glasg)
SECRETARY - (ETHICS COMMITTEE)
Institutional Review Board,
Christian Medical College, Vellore - 632 002.

Dr. Nihal Thomas
Secretary (Ethics Committee)
Institutional Review Board

Cc: Dr. Renu George, Dept. of Dermatology, CMC



Pic 1– Wheals over lower limb in a child with urticaria

Pic 2- Periorbital angioedema

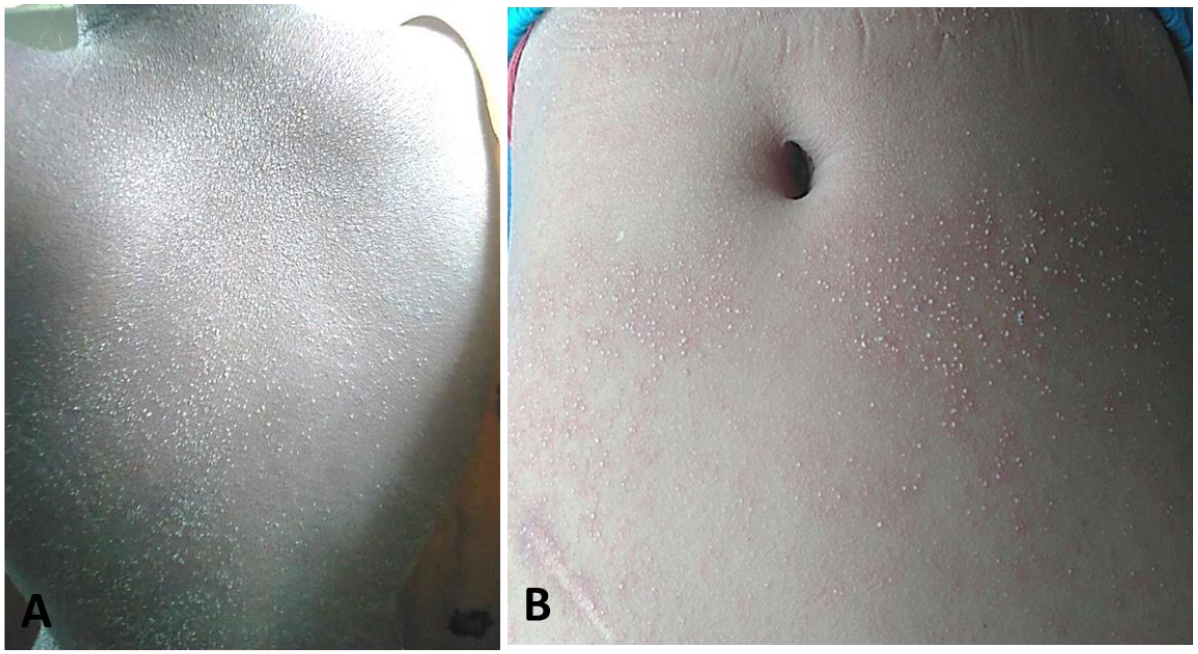
Pic 3- Purpuric lesions over lower limbs in a child with HSP

Pic 4-Oral mucosal involvement in a child with erythema multiforme major

Pic 5 – Skin detachment in a child with TEN

Pic 6- A child with SJS to phenytoin

Pic 7- Maculopapular exanthem associated with DRESS syndrome to phenytoin



Pic 8-Acute generalised exanthematous pustulosis over back (A) and abdomen (B)

Pic 9- Papular lesions of HFMD over dorsum of left hand

Pic 10- Maculopapular rash in a child with viral exanthem

Pic 11- Rash in child with dengue over lower limbs

Pic 12- Crusted eroisions over chin in a child -impetigo

Pic 13- Perioral desquamation in a child with SSSS

Pic 14- Purpura fulminans

Pic 15- Vasculitic lesions on palm in a child with SLE

Pic 16- Irritant contact dermatitis over right upper limb